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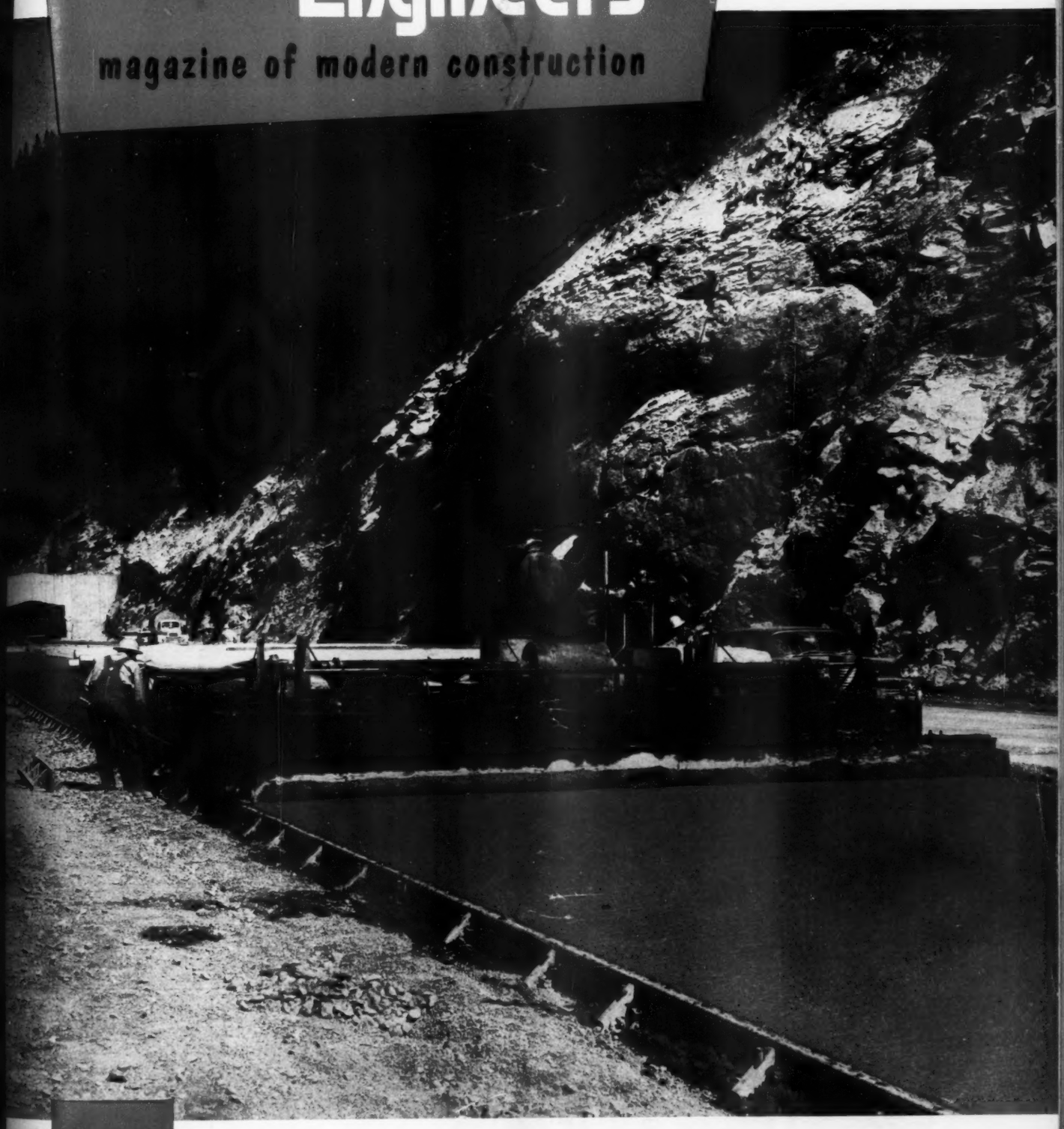
SEPTEMBER 1959

A Buttenheim Publication

Contractors and Engineers

magazine of modern construction



Concrete paving in Cascade Range Page 62

South Dakota can employ stage construction on highways . . . with ASPHALT

Second step in stage construction on U. S. Route 212 in South Dakota. Laying plant-mixed Texaco Asphaltic Concrete over old Road-mixed asphalt pavement.

Type of rollers used to assure satisfactory compaction of new Texaco Asphaltic Concrete wearing surface.

An important advantage of asphalt to highway officials is that it lends itself so well to long range stage construction. South Dakota demonstrates this on the 9-mile section of U. S. Route 212 illustrated here.

Some time ago, the state constructed a relatively low cost type of asphalt surface on this highway by the Road-mix method. After it had served traffic for a number of years and had become thoroughly consolidated, the highway was ready for the second stage. A high-type plant-mixed Texaco Asphaltic Concrete pavement was laid this year over the original Road-mixed asphalt surface. The new and the old asphalt courses combine to form a rugged pavement which will serve the highway's increased traffic for many more years, with a minimum of maintenance.

Stage construction of highways with asphalt enables South Dakota to spread the cost over the years, while giving traffic durable, all-weather pavement at all times.

Helpful information on Road-mixed and Plant-mixed asphalt paving is supplied in a pair of free Texaco brochures. Copies of these can be had by writing our nearest office. No obligation.

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TEXACO ASPHALT

For more facts, use Request Card at page 18 and circle No. 251

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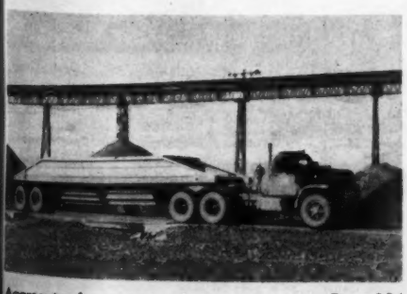

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Editorial

Yards to meters?

During his short term in office, former Secretary of Commerce Lewis L. Strauss said he had long been convinced that ultimately the United States must shift to the metric system. Already in this country such scientific industries as the chemical, electronics, and pharmaceutical have switched to the metric system. But civil engineering and the construction industry are still using the English system of measurement that established the yard as the distance from a man's nose to the fingertips of his hand, held at arm's length and at right angles to his face. Aside from the English-speaking countries of the United Kingdom, Canada, and the United States, practically every nation on the globe has adopted the scientific metric system invented by the French, with its unit of length, the meter (39.37 inches), being one ten-millionth part of the distance from the equator to the pole measured on a meridian.

Both India and Japan have only recently changed to the metric system, and reports indicate that the transition was smooth after some understandable initial confusion. The problems experienced in the changeover by Japan, an industrial nation, would be similar to what this country might expect in a like shift. But the advantages should outweigh the shortcomings of moving on into the future while tied to a system of measurements that is mired in the past.

With the increasing use of high-speed electronic computers in engineering calculations ranging from earthwork quantities to complicated bridge design, the work could be eased with the more efficient metric measurements. In selling abroad, American manufacturers of equipment from big earthmovers to testing devices could be at a disadvantage if their products, along with accompanying literature and specifications, are not marked and explained in terms of metric units that are uniform throughout most of the world.

Engineering schools could conceivably give their students better mathematical training with the simpler metric system. Our technical-assistance program in helping other countries would be much easier if our advisers were well versed in that system. U. S. engineers who can think only in terms of inches, feet, and yards can hardly be expected to train nationals of other countries where the meter, centimeter, and millimeter are standard in construction.

Even within our present system of measurements, there is no uniformity. In staking out a highway, the engineer takes a tape that is divided into feet and decimals of a foot. In laying out a building, he will use a tape divided into feet and inches. The cement industry is currently posed with the problem of whether or not to continue measuring its products in terms of the archaic barrel or switch to the ton. And if the shift is made, will the "ton" used be the 2,000-pound short ton, the 2,240-pound long ton, or the 2,204.6-pound metric ton?

The term "barrel" goes all the way back to the days before cement was produced in this country, when it was shipped to us from Europe in barrels. So while the barrel, physically, has become obsolete for containing cement, the word is still used as a unit of measurement. However, bulk cement shipments are paid for by the ton, and concrete mixes are also designed and batched according to weight. Why not measure cement by weight, too, and get in step with the other cement-using countries of the world?

Adoption of the metric measure is now being urged also in Great Britain. This could well be the appropriate time for both countries to give serious thought to adopting the more efficient system of measurement. A start could be made by taking the kilometer to measure distances and the kilogram and metric ton to measure weights. This suggestion, of course, is flying right in the face of the defender of the acre, a term that originally indicated the amount of land that an average man could plow with an average horse in an average day.

CONTRACTORS AND ENGINEERS

A Buttenheim Publication

470 Fourth Ave., New York 16, N. Y.

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Acceptance under Section 34.64 P. L. & R. Authorized at Lancaster, Pa. Vol. 56, No. 9.
$5 a year, $1 a copy in the United States and Canada. $8 a year in other countries. Issued monthly.

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Finishing of a 24-foot slab on U. S. 10 high in Washington's Cascade mountains is handled by a Heltzel Flex-Plane finisher. One roadway goes through the snowshed, the other passes alongside.

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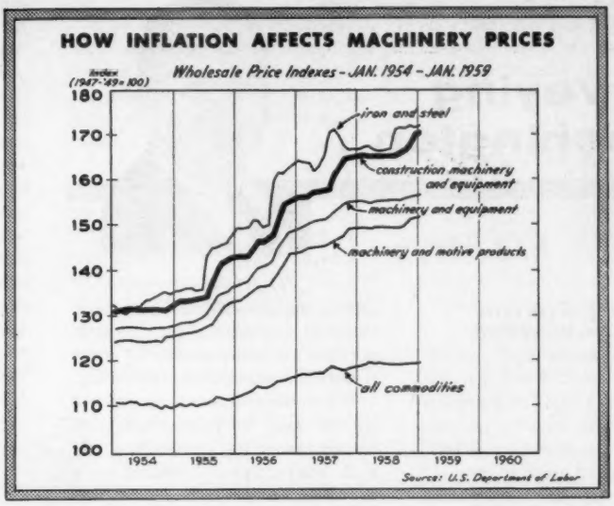
Business Comment

Inflation hits home



Five-year rise in machinery prices has followed a long upward trend in cost of basic materials.

If contractors need another reminder of the high cost of inflation—which is doubtful—they have it in a recent Bureau of Labor Statistics study of construction-machinery trends from January, 1954, to January, 1959.

Prices climbed 30 per cent in those five years, with sharp and prolonged rises coming in mid-1955 when construction volume hit a new peak and again in the period from early 1956 to mid-1957 when the new Road Program spurred buying. In between, there were smaller rises and periods of from 5 to 11 months when prices leveled off as demand slackened. Last fall, prices started upward once more, slowly but persistently, to a new record index of 172.1 reached in June of this year.

Here is where the price indexes stood at mid-1959 for some items: power cranes, 168.4; hydraulic dozers, 166; ditchers, 156.6; air compressors, 167.5; scrapers and graders, 165.7; truck mixers, 131.1.

It has been customary in recent years to shrug off price rises that follow increased demand as an inevitable part of doing business in a free economy. Of late, however, there has been a tendency to look behind the "inevitable" price rise to try to see how it got that way.

If we look at equipment prices this way we see, for one thing, that the construction-machinery price rise is by no means a special case to be explained by conditions peculiar to the construction industry. The indexes for all machinery and for machinery and vehicles rose in roughly the same pattern during the last five years, if not quite as high (see graph).

In fact, all three indexes have something else in common: they all followed the iron and steel index up the price scale, nearly turn for turn.

The prices that equipment manufacturers pay for mill shapes, castings, motors, bearings, and scores of other items that go into construction machines depend largely on the price of iron and steel. The Bureau of Labor Statistics recently looked into what happened in the last five years to the prices of about 40 per cent of these materials. It found that construction-machinery manufacturers are paying roughly 30 per cent more than in 1954 for materials that go into equipment. Their labor's average hourly earnings are up 23 per cent, though no data is available on possible productivity gains.

Looking at equipment prices in this light, a contractor might well ask, "Who represents my interests at the steel negotiations table?"

Goodyear builds a giant to do a giant's job! In this 10-foot, two-ton tire is enough rubber for 320 car tires, enough nylon for 7,200 pairs of stockings. It's the largest tire ever made.

Tire for the Future to Roll on—

The earth-mover for which this tire was designed may still be on the drawing board.

Why, then, has Goodyear invested a quarter-million dollars in equipment to produce this giant off-highway tire?

Simply because, in this age of prodigies, earth-movers of enormous size soon will be taking awesome bites of earth to change the face of ever-building America.

The loads will be staggering, the footing generally bad, the traction uncertain. So Goodyear tire research and engineering men are solving these problems even before builders come to grips with them.

With Goodyear tires like this one, weight distribution will be such that 50-ton loads will bear approximately no more heavily on the earth than would your car.

Fantastic loads will not dig themselves in. Steady traction will move them efficiently regardless of soil conditions. And super-tough treads will fight gouging, chipping and abrasion to keep equipment steadily in service.

You might call this titanic tire a prototype—a research specimen—a proof of unique tire-building ability.

But better call it just the Goodyear way of being ready—well ahead of time—for the future. And the future begins at the next tick of the clock.

GOODYEAR

MORE TONS ARE HAULED ON GOODYEAR TRUCK TIRES THAN ON ANY OTHER KIND

For more facts, use Request Card at page 18 and circle No. 252

Surveying Washington..

by E. E. Halmos, Jr.

Bad estimating on job costs receives Congressional blast

With temperatures and personal heat rising as the Congressional session moved to a close, construction officials in Washington got a thorough roasting from Congress for poor estimating of eventual project costs.

Rep. Don Magnuson (D., Wash.) declared, "One of the most exasperating and frustrating facts in the life of a congressman is the apparently unchangeable bureaucratic custom of underestimating costs of construction projects.

"The Air Force Academy is a classic example. We were (originally) told this glass castle . . . would cost $125 million. But the academy . . . is going to cost at least $200 million. . . . I submit that an underestimate of these proportions cannot be explained away.

"We on the appropriations committee now take it for granted that when the Bureau of Reclamation and the U. S. Army Corps of Engineers gives us cost estimates on a project, we will not recognize the figure a few years later. . . . In my opinion, many an agency official is so anxious to convince Congress . . . that he is ultra-conservative—consciously or subconsciously—when it comes to cost estimates."

Meals, room given to worker are not taxable income

Meals and lodging provided to a construction worker "for the convenience of the employer" where job requirements and lack of local accommodations make it necessary or advisable are not "salary" and need not be included as taxable income when the worker files his return.

That is the effect of a U. S. Tax Court decision (32 TC 93, Docket 66682) concerning the income tax of a construction man who had been employed as a mechanical supervisor by contractors who built a tunnel on the Anchorage-Palmer Highway in Alaska in 1951, 1952, and 1953. According to the evidence, the job was located about 40 miles from Anchorage, was inaccessible because of weather much of the year, and the worker's job was such that he had to be available on a 24-hour basis.

The contractor supplied living quarters for the worker and his wife. In its accounts, the contracting firm made a book entry of $40.25 per week against its employee's name for board and lodging, then each week entered a counter credit in the same amount. The employee received only his salary.

In 1953, the supervisor subtracted

from his gross income a total of $3,549 to account for this "room and board." The Internal Revenue Service disallowed the deduction on the ground that the sum was not "away from home" expense and thus was includable, for tax purposes, as salary.

But, said the court, "the camp lodgings and meals here involved were furnished . . . by the contractor 'for the convenience of the employer' . . . and the petitioner (is) entitled to exclude from . . . gross income the amount which (he) did exclude."

Construction at root of labor-bill dispute

The construction industry was at the root of the dispute over the various bills up for consideration, even though the aim that caught the public eye was the attempt to get rid of gangsterism in the unions.

But the Taft-Hartley "sweeteners" included in the House committee bill (HR 8342) affected construction and, in effect, legalized secondary boycotts on construction jobs by insisting on considering all contractors on the job as one employer. Little was said about "hot cargo."

The Landrum-Griffin bill (HR 8400) outlawed secondary boycotts and hot-cargo clauses more to the satisfaction of construction groups and got strong support from the administration and others, including Sen. John McClellan (D., Ark.). But union opposition made the decision a tough one for many a congressman who felt he was elected with strong union backing. And there were many honest fears that legislation passed in the heat of such a debate might do more harm than good to the majority of well run union organizations.

Congress helps contractors in metropolitan areas

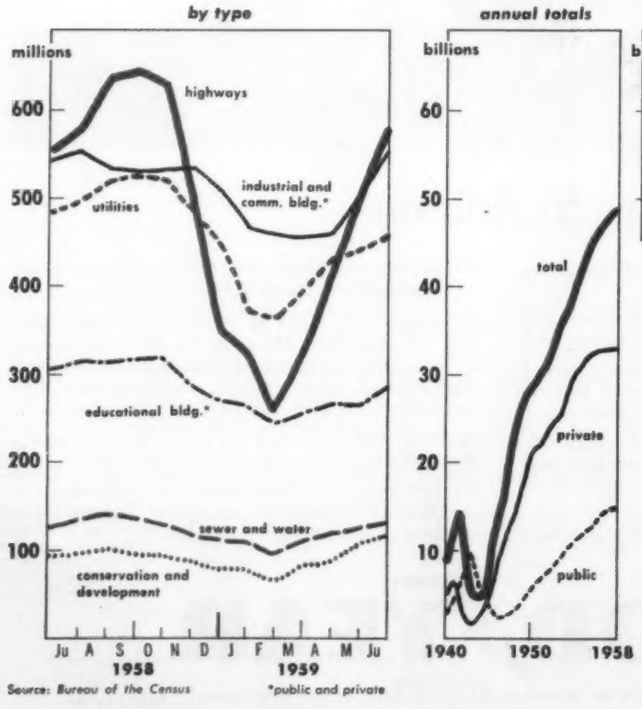
Congress has created construction business in major metropolitan areas by approving a compact between New York and New Jersey for a joint transportation agency, and by directing Washington, D. C., commissioners to study factors involved in establishing heliports in the capital.

The transit agency will undertake a survey of transit problems in the huge

Industry Trends

DOLLAR VALUE OF NEW CONSTRUCTION

Recent Monthly Trends

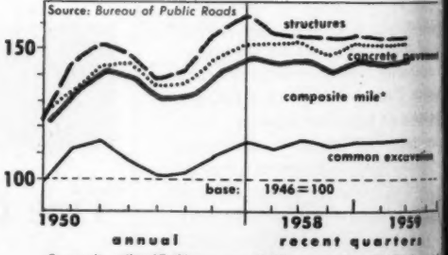


Source: Bureau of the Census

*public and private

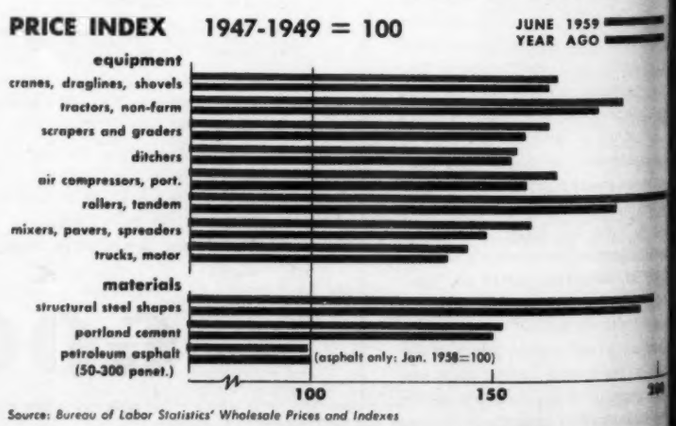
AVERAGE BID PRICES

Federal Aid Highway Construction



Composite mile=17,491 c.y. exc.; 3,726 s.y. paving; 16,000 lbs. reinf. steel; 4,325 lbs. struct. steel; and 68 c.y. struct. conc.

PRICE INDEX 1947-1949 = 100



Source: Bureau of Labor Statistics' Wholesale Prices and Indexes

suburban area around New York City, prepare both interim and long-range plans for improving transit, and issue bonds as authorized by the two state legislatures.

Washington commissioners, appointed by the President, were directed to study feasibility, construction costs, and other factors concerning metropolitan heliports, and bring in a report by next June.

Prequalification for bids under Senate debate

Construction contractors and subcontractors have a special interest in a debate started on the Senate floor aimed at forcing the General Services Administration to change its prequalification requirements for bids on federal buildings.

Sen. Barry Goldwater (R., Ariz.) led off the discussion by quoting a GSA bid-notice for an elevator installation in the Phoenix federal courthouse. It required that "the bidder must have installed the elevators in three separate buildings where the control and operation meet, and the loads and speeds meet, or exceed, those required by this specification. . . . Failure to meet the . . . experience requirements . . . will be reason for disqualification." Goldwater also cited similar requirements in a major repair program on a New York post office.

"There are two economic standards brushed aside by this type of restrictive experience requirement," said the senator. "First, it can eliminate the low bidder and push the cost up . . . not because a firm is incapable of meeting the normal specifications for the job, but because the firm has no past experience in a specific type of installation. Second, it restricts competition—eliminating the low bidder, or any bidder—and opens the way to noncompetitive selection of contractors."

The senator added that if a business firm bids, and is low bidder, can provide bond, and show financial soundness, and ability to handle the job, it should be permitted to bid.

Since Goldwater is a member of the Senate's powerful Small Business Committee, his interest could stir a study of GSA practices and a change.

GAO audit report on BPR draws some criticism

The audit report on the Bureau of Public Roads, filed with Congress by the General Accounting Office, was generally friendly in tone to the bureau, and gave BPR credit for attempts to modify its procedures to what GAO thinks is a more business-like basis.

But the GAO report leveled particular criticism at a number of matters: incentive contracts with consultants; practices in some states of announcing engineers' estimates before bids are opened; and state procedures in qualifying contractors.

On engineers, GAO commented that since fees are based on percentages of awarded contract prices, and since states are encouraged to exceed minimum standards, there is "possibly" too much incentive to consultants to design expensive highways. (The BPR, ASCE, and AASHO have a joint committee working on this problem now.)

On announcing estimates, the treasury watchdogs said such practices in New York, Nebraska, Colorado, Illinois, and Arizona "may act to restrict competition and influence bidders' prices."

On contractor qualification, the GAO states, "We recommend that the BPR provide for periodic review and verification of the states' prequalification and related bidding procedures. Competition for highway construction contracts can be restricted by inadequate administration of prequalification procedures."

Other criticisms included the point that most states still haven't proper right-of-way acquisition procedures and covered lack of control by the BPR over payment for utility relocations.

New insurance regulations on Air Force construction

If you operate aircraft in connection with the performance of an Air Force construction project, you will be required to carry bodily-injury and property-damage insurance coverage, under new contracting regulations.

Air Force contracting officers will now require that a contractor operating such aircraft carry liability insurance providing a minimum of $50,000 per person and $100,000 per accident for bodily injury, and $50,000 per accident for property damage.

Construction-rig sales jump 40 per cent over 1958

Construction-machinery shipments followed a construction-business upturn during the first quarter of 1959, jumping 40 per cent over the same period in 1958, according to the Department of Commerce.

The $248 million total for the first quarter of 1959 includes $72 million for track-laying tractors; $50 million for tractor-shovel loaders; and $21 million for off-highway wheel tractors.

Cat DW21-PR21 units handle rock "on the double" on U. S. 10, Montana

When Albert Lalonde Company, Sydney, Montana, was awarded a $1,537,337 contract on a four-mile section of U. S. 10 on the Interstate System, three Cat DW21 Tractors with Athey PR21 Rear Dump Wagons were purchased for hauling the rock. A. M. Stolzenburg, Superintendent, tells why: "We ran three seasons with them in rock jobs. Now that we're back in rock again, we bought some more. They're big, rugged and an easy shovel target, have a low center of gravity and are maneuverable."

Note how these features met the conditions on this job. The units had to work in limited room on benches and steep haul roads. Material handled for fill included shot rock and sandstone. On haul lengths averaging 300 yards, the units handled 275 cu. yd. an hour. At the start of the job, they worked 8 hours a day; to finish it, 16 hours a day.

New DW21 Series G now 345 HP

Now a new DW21 Series G is matched to the 22.5 cu. yd. PR21 for even faster production on the toughest jobs. Compared with the model it replaced, it has new HP—345 (maximum output) for an increase of 8%. It also has 12% higher rimpull. This increased rimpull provides up to 20% faster travel speeds under similar haul road conditions. Equally important, the horsepower increase was achieved without any sacrifice whatsoever in the excellent torque characteristics of the Cat Super-Turbo Engine.

Get the complete facts on the Cat DW21-PR21 from your Caterpillar Dealer. Ask for a demonstration. Pick a tough job—see for yourself how this giant handles the hard work!

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

CATERPILLAR

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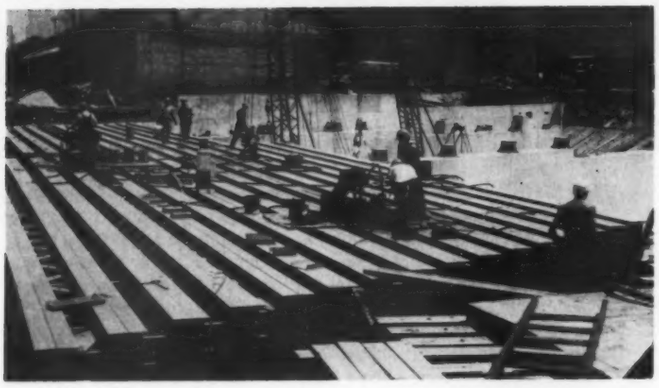
THE ONLY COMPLETE TRACTOR-TRAILER LINE... BY THE LEADERS

LOAD FAST! PR21 offers a big target. Short non-stop turns of DW21-PR21 unit speed spotting under shovel and work on a narrow bench. PR21's special steel withstands impact, abrasion and corrosion.

ROLL FAST! Two of three DW21-PR21 units on the job. DW21 combines high travel speed with excellent torque characteristics. The PR21 has a 22.5 cu. yd. heaped and 62,000 lb. capacity. All this adds up to fast cycles, top production.

DUMP FAST! PR21 has hydraulic hoists for quick and complete dumping of any material. DW21's hydraulic steering facilitates maneuvering. Wide-section, tubeless tires provide maximum flotation and sure traction.

For more facts, circle No. 253



A total of 7,200 tons of structural steel, mostly plate-girder spans, is going into a 700-foot railroad grade-separation underpass in Chicago. Bethlehem Steel Co. is handling fabrication and erection.

Big railroad grade separa

One of the heaviest concentrations of structural steel for a highway construction job is going into a railroad grade separation between West Wayman and West Kinzie Streets in downtown Chicago. About 7,200 tons of steel, mostly fabricated plate-girder spans, will support an underpass section of the new Northwest Expressway connecting The Loop and O'Hare Airport.

AISC bridge competition still open for entries

September 14 is the closing date for entries in the annual bridge-design competition sponsored by the American Institute of Steel Construction, 101 Park Ave., New York 17, N. Y.

Eligible for competition are bridges erected anywhere in the United States and opened to traffic in 1958. Awards will be made for four classifications: bridges with one or more spans 400 feet or longer; bridges costing over $500,000 with fixed spans but none more than 400 feet long; bridges costing less than $500,000 with fixed spans; and bridges with movable spans.

A stainless-steel plaque is awarded as a permanent marker for each prize-winning bridge in each class, and certificates are given to owners and structural-steel fabricators of bridges winning honorable mention.

Entries are selected by a national jury of awards from photographs submitted to the AISC. The only requirements for entry in the competition are good photographs and data on span lengths, cost, roadway width, and the names of the designer, owner, and steel fabricator.

Documat and Bruning sign sales agreement

■ The Charles Bruning Co., Mount Prospect, Ill., and Documat, Inc., Belmont, Mass., have signed an agreement under which Bruning will distribute and service Documat microfilm cameras, readers, and related equipment in the United States and Canada. The equipment will be available to business and industry.

Armco to install huge zinc-coating unit

■ A continuous coating unit for the production of zinc-coated steel sheets will be installed at the Middletown Works of Armco Steel Corp., Middletown, Ohio. Associated with this new facility will be a conversion of one of the existing zinc-coating units at Middletown for the production of aluminum-coated sheets and coils.

Scheduled for operation by the end of 1960, the 565-foot-long unit will be able to coat a 72-inch-wide steel strip at a speed of 300 fpm. Capacity of the new line will be approximately 30 tons of coated steel per hour.

Texaco Simplified Lubrication Plan Ke

W. N. EVANS (left), Contractors Manager for Rocky Reach Contractors, points out that the general high production r job can be attributed to extended machine decreased downtime. He specified Texaco lubric thorough experience with these products in previ Western dam projects. E. S. Saunders, Texaco C Sales Representative, helped him choose the lubricants required for all equipment on the job

ires 7,200 tons of steel

From Wayman Street north, the girders—resting on two outside concrete abutments and a concrete pier in the center—will support the Milwaukee Road freight house and nine railroad tracks, a freight driveway, Pennsylvania Railroad freight house and four tracks, another freight driveway, eight Chicago & Northwestern railroad tracks, and Kinzie Street.

The first of the 257 girders needed for the project is being placed just to the north of the third pair of Milwaukee Road tracks. Two Lima Model 703 crawler cranes, each with a 50-ton capacity, swing the steel into place. Moving north from the first three Milwaukee Road tracks, 60-ton and 75-ton-capacity locomotive cranes will place the girders to support the remaining six tracks.

The first three pairs of tracks, and the temporary wooden trestles supporting them, will be removed to permit Bethlehem Steel crawler cranes to install the girders and steel-plate deck. The railroad will then replace the tracks. Locomotive cranes, following the same procedure, will erect the steel for tracks 4 and 5, 6 and 7, and 8 and 9.

Both crawler and locomotive cranes will erect girders that will support the Pennsylvania freight house. Since the girders cannot be lowered onto the piers, they will be placed on the ground in such a way that they can be moved to their proper location on steel rollers. Jacks will then lower them onto piers that will be built after excavation is done. Most of the remaining steel will be erected by crawler crane.

Viaduct jacked up

A side feature of the project was the raising of the existing Halsted Street Viaduct from 1 to 2 feet to increase overhead clearance along the Pennsylvania Railroad tracks. The viaduct, which runs almost directly north and south, bisects the route of the expressway at the midpoint of the Wayman-Kinzie project.

The viaduct consists of three spans, each composed of three 163-foot-long through trusses resting on two old stone piers between the abutments. Four 100-ton hydraulic jacks were placed at each truss-line intersection over one of the piers, and all 12 jacks were raised simultaneously. A steel-pile falsework system was installed to support the trusses and, after the same procedure was followed at the other pier, both stone supports were removed.

The entire operation was accomplished over a weekend so that it did not interfere with heavy weekday traffic. Eventually, the viaduct will be supported on new steel bents which, in turn, will be supported on the new girders that will be erected around and through the temporary falsework.

The most unique feature of the entire project is that the heaviest rail traffic in the city will be uninterrupted. Kenny Construction Co., general contractor, made this possible by erecting all the tracks on temporary wooden trestles as excavation progressed.

When steel is erected, Bethlehem ironworkers will be able to replace the wooden trestles with girders only at those times when rail service will permit.

The Rankin, Pa., works of Bethlehem Steel Co. fabricated the girders, which range from 76 to 80 feet long, 6 to 9 feet deep, and weigh from 20 to 50 tons. This steel will give the 700-foot-long underpass section a concentration of slightly more than 10 tons per foot.

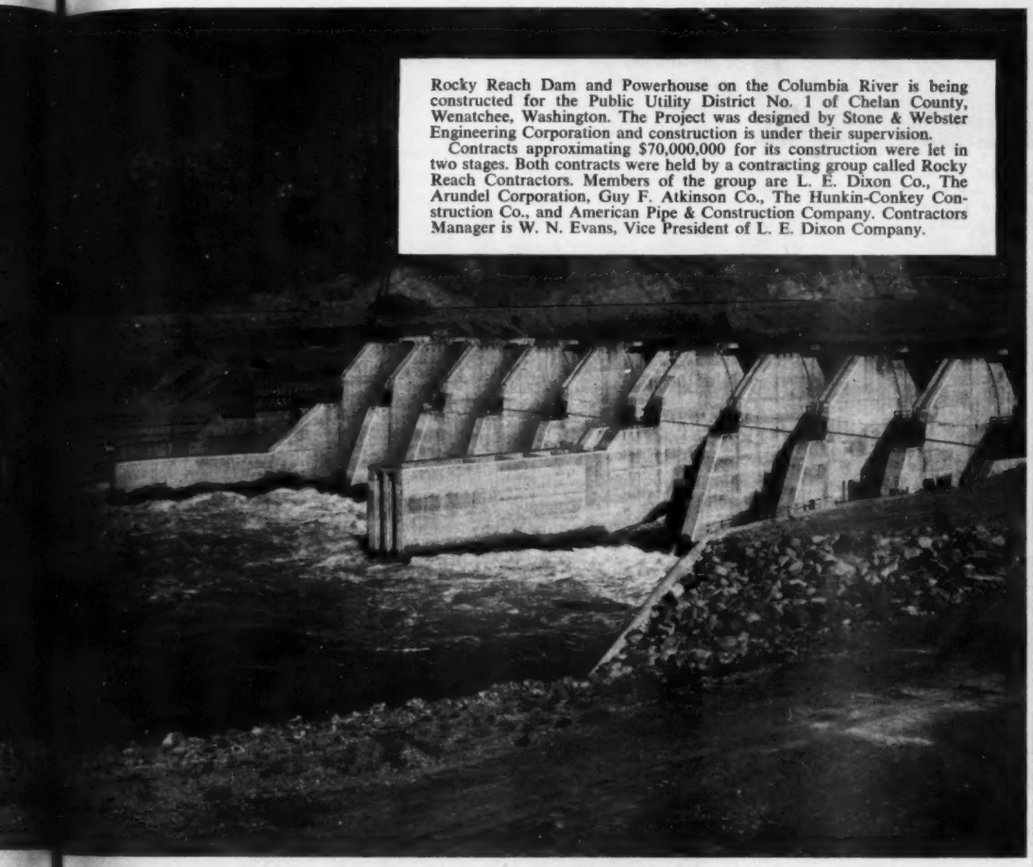
Personnel

The project is a joint venture of the state of Illinois and the city of Chicago, with the work under the direction of the city's Bureau of Engineering, Department of Public Works. Commissioner G. DeMent heads the department; chief engineer for the bureau is Dick Van Gorp.

Consulting engineer is DeLeuw, Cather & Co. Steel erection is under the direction of H. E. Crider, manager of erection for Bethlehem's western district. THE END

Rocky Reach Dam and Powerhouse on the Columbia River is being constructed for the Public Utility District No. 1 of Chelan County, Wenatchee, Washington. The Project was designed by Stone & Webster Engineering Corporation and construction is under their supervision.

Contracts approximating $70,000,000 for its construction were let in two stages. Both contracts were held by a contracting group called Rocky Reach Contractors. Members of the group are L. E. Dixon Co., The Arundel Corporation, Guy F. Atkinson Co., The Hunkin-Conkey Construction Co., and American Pipe & Construction Company. Contractors Manager is W. N. Evans, Vice President of L. E. Dixon Company.



Kee cky Reach Construction on Schedule

t lubricants are needed to handle all major ents on the Rocky Reach Dam project. That's e Texaco Simplified Lubrication Plan keeps y down, cuts handling and storage costs, helps nce personnel sidestep the dangers of misappli- Here's what Contractors Manager W. N. Evans y about it:

high production we've been getting from our at Rocky Reach Dam is due in large measure ly we've had from Texaco. The Texaco Lubrica- —and the service that goes with it—really help r equipment on the job. We've had little downtime getting longer machine life."

ans and the local Texaco Lubrication Engineer e six basic Texaco lubricants to meet the require- the project after a complete lubrication survey pment. Their selections: 1) *Texaco Ursa Oil* ty for all super-charged engines; 2) *Texaco Heavy Duty* for all other diesel and gasoline engines and air compressors; 3) *Texaco Rock Drill Lubricant EP;* 4) *Texaco Marfak Multi-Purpose 2* for all grease applications; 5) *Texaco Track Roll Lubricant;* and 6) *Texaco Crater Fluids* for open gears and wire rope.

Your Texaco Lubrication Engineer can show you how much the Texaco Simplified Lubrication Plan has saved other contractors—how it can help you. Call the nearest of the more than 2,300 Texaco Distributing Plants, or write Texaco Inc., 135 East 42nd Street, New York 17, N. Y.

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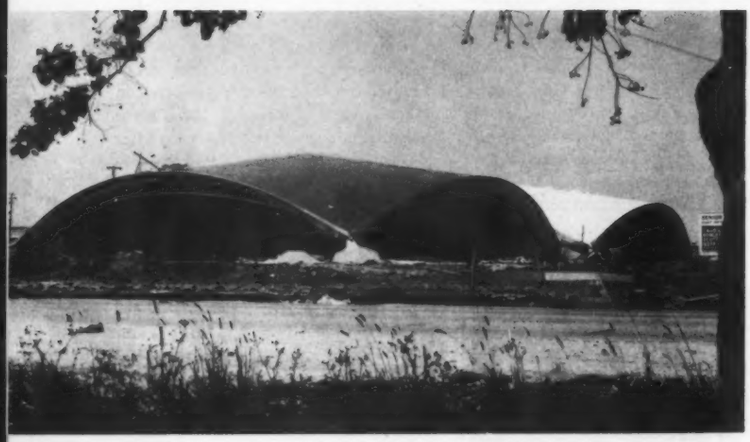
Laminated wood arches span 215 feet



Laminated wood arches provide economy in construction for the clear-span 150-foot-square gymnasium and auditorium structures of the Thomas Jefferson Senior High School in Port Arthur, Texas. The gym roof, background, has been given a final coating of marble chips; brown rice gravel on the auditorium will be covered with a layer of limestone chips.

Wood provides economy in school's gym and auditorium; many modern building features go into new senior high

by Bill Allen, field editor

Though challenged by steel, concrete, and aluminum, good old wood is right in there fighting for its place in clear-span building construction. Supported by sturdy laminated arches, the all-wood structures are beautiful to behold and economical to build.

Two large wood shells recently completed in Port Arthur, Texas, are identical structures forming the gymnasium and auditorium roofs of the Thomas Jefferson Senior High School.

The buildings contain one of the country's longest clear spans using this laminated-arch design. Each 150-foot-square building contains a diagonal span of 215 feet. The span rises to a maximum height of 41 feet above the finished floor.

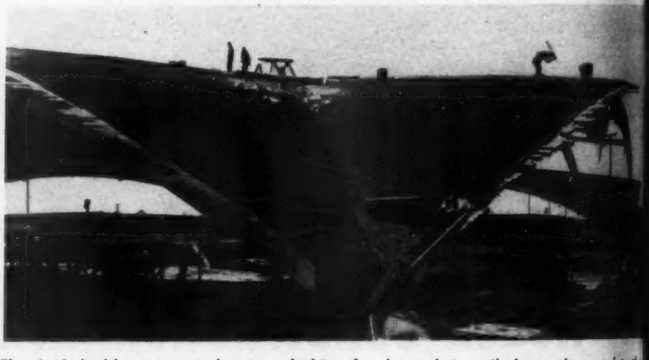
Practically all of the structure is wood. The framework of laminated arches supports a solid 4-inch-thick wood deck. The double tongue-and-groove 4×6's comprising the deck are nailed to each other and to the framing. A built-up roof, topped with gravel and marble chips, is placed directly on the wood decking. The entire structure is supported by four concrete buttresses.

Advanced design

Credit for the design of the structure goes to Edward Nye, engineer partner in the architectural firm. Fabrication of the huge arches was done by Unit Structures, Inc., Peshtigo, Wis. Autrey Construction Co., Beaumont, Texas, subcontracted the erection of the twin roofs from the general contractor, Robert H. Smith & Co., Houston, Texas.

Designed by Caudill, Rowlett, Scott, Neff & Associates of Houston and Port Arthur, the 2,300-pupil high school embodies some of the most advanced thinking in school design. In addition to the two arch structures, the school contains a 440×270-foot

A crane assists workmen in making a final adjustment to the bolted connection plate at the crown of a 150-foot outside arch for the gym. The two main arches, which cross the area on diagonals, span 215 feet. The smallest of the secondary arches is 30 feet. Maximum height of the roof is 41 feet above the floor.



The 4×6 double tongue-and-groove decking for the arch is nailed together and to the roof with 8-inch annular nails. A temporary layer of felt roofing is applied to protect the exposed deck. Concrete buttresses, which carry drainage, support the entire structure.

The laminated arches are covered with tough waterproof paper to protect them from weather and the hazards of construction. At the point where the four sections of the diagonal arches come together, steel plates are connected with a double pin connection that allows a slight up-and-down movement.

Inside the nearly completed gymnasium, a Ford F600 boom truck assists crews bolting the connections for the steel frame that will support basketball backboards. Windows in the roof supplement the two window walls in providing light.

2-story classroom building. The four sides of the building enclose a 200×170-foot open court. The layout also includes a one-story cafeteria building, a one-story shop building, and a one-story music and physical-education building.

Barrel roofs

Dominating the school area are the two graceful arch structures. Basically, each roof is composed of two barrel roofs intersecting at right angles to form a cross. At the valleys formed by the intersecting roof surfaces are two diagonal arches spanning 215 feet. It is believed that this is the first groined-vault-type construction using laminated wood arches as main structural members.

The main diagonal arches, built of 2-inch laminations of southern pine, have a maximum cross section of 14×56 inches. Each base of an arch rests in a metal shoe connected by a 6-inch pin joint to a steel rod embedded in a concrete buttress. The top of each arch is joined to three other sections by means of a multiple pin connection. The connections, at the tops and bottoms of the arches, allow the structure to "breathe"—to rise and fall with varying temperatures and pressures.

The five secondary arches, which span the distance between the diagonal arches, vary from 150 feet at the perimeter to 30 feet near the crown. These laminated arches are braced with wood purlins and cross-braced with steel rods.

Building buttresses

Construction of the twin buildings was straightforward enough, although at times their odd shape and unusual framing had the superintendent scratching his head. One of the first steps was construction of the concrete buttresses.

Each of the buttresses rests on five belled shafts about 10 feet long. The concrete caissons, in turn, support a 2-foot-thick pad that carries the pear-shaped buttress. Embedded in the concrete of the buttress is a 6-inch pipe running diagonally from the pad to the pin connection at the top.

The odd-shaped buttress was formed with three sections of Masonite-faced wood forms. The inside bowl was formed by hand troweling. The bowl acts as a catch basin for water draining off the roof and into underground drains.

Erecting the arches

The huge arch sections were fabricated in Magnolia, Ark., and then shipped by rail to Port Arthur. It required three gondola cars to carry the larger half-sections of the arches. Two truck tractors, working back to back, hauled the sections from the railhead to the job.

The job of setting the 10-ton arch sections in place was a tricky business. It required as many as three cranes. One crane held one half-section in place, while the other two maneuvered the opposing section to fit the pin connections at the top and bottom. After the diagonal arches were set, the secondary arches were put in place, starting from the inside and working out. The larger secondary arch sections were tied to the main arches by means of bolted shoe plates and joined at the crown by a bolted steel collar.

Wood deck

With the frame erected, carpenters got out their big hammers and went to work on the deck. Using 8-inch annular nails, they pinned the 4×6 double tongue-and-groove planks to

(*Continued on page 14*)

Working from rolling scaffolds, men install Johns-Manville mineral acoustic tile in a classroom. The rectangular hole is for a Glassheat radiant heating panel; all classrooms are heated from the ceiling. Floor to ceiling blackboards are standard.

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40-TON LORAIN-56

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The model H-50 is the successor to the model HU in the "PAYLOADER" line of 4-wheel-drive tractor-shovels, and is another example of the continual development program that has maintained Hough leadership in tractor-shovel design and performance. The model H-50 contains a number of improvements that give it outstanding performance for a machine in this size range.

Full 5,000 Lb. Carry Capacity

You can lift loads of 7,000 lbs. to maximum dumping heights, and can CARRY LOADS up to 5,000 lbs., which means you can use buckets up to 2 cu. yd., depending on the materials to be handled. The bucket tips back low and close — with better balance and stability and with less spillage.

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Power-shift transmission with three speeds forward and reverse, plus easy power-steer and 4-wheel power brakes, assure fast operation with minimum operator effort . . . promote a high production rate the full shift.

Full Protection for Long Life

The brakes of the front wheels are sealed to prevent scoring and glazing by foreign matter. Large oil-bath air filters and cartridge-type oil filter protect the engine. Two cartridge-type oil filters protect the hydraulic system oil and the transmission-torque converter oil.

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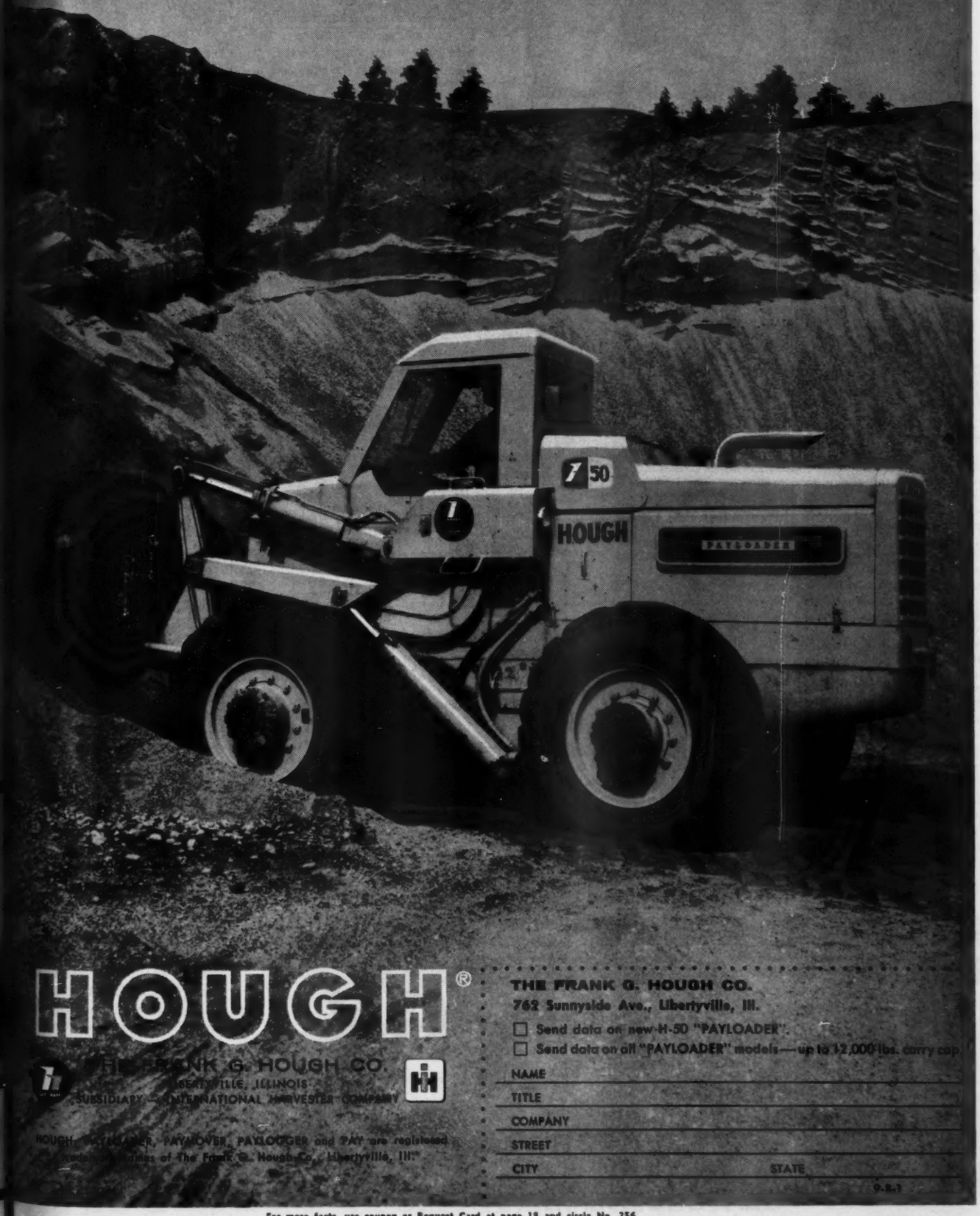

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Asbestospray, a mixture of asbestos fiber, cement, and rock wool, is sprayed onto the metal lath of a hung ceiling in one of the school's activity rooms. The 1-inch thickness is pressed in place with a plywood board and then with a square of cork.

(Continued from page 11)

the frame and to each other. A nail that tied the planks together was driven horizontally through the 6-inch width of one plank to penetrate 2 inches of the adjoining plank.

The carpenters started at the base of the arch and worked upward. The Engelmann's spruce planks were laid on a straight line from the valley at the diagonal arch to the outer edge of the perimeter arch. A temporary cover of felt was nailed down as the work progressed to protect the deck from rain.

The permanent covering of the wood decking consists of a 5-ply built-up roof, covered first with a layer of rice gravel and then with a layer of marble chips.

Exterior walls are curved

In the gymnasium, two opposing exterior walls are of brick while the other two walls are of glass and steel. All four sides of the auditorium are enclosed in brick. To harmonize with the roof of the structure, the double-brick walls are built on a curve. Each convex wall rises up to a crescent-shaped opening, between the brick and the wood roof, which is windowed with Plexiglas. Since the roof is not rigid, a vertical sliding joint makes the connection between the Plexiglas and the roof.

New materials for classrooms

Although wood is the predominant material in the gymnasium and auditorium, other modern building materials are put to good use in the steel-frame classroom and activity buildings. Lightweight concrete with a vermiculite aggregate forms the roofs of many of the buildings. The concrete is placed on Corruform steel decking and receives a built-up tar-and-felt cover.

A new material, known as Insulrock, makes up the roof of the shop building. The material is made of compressed excelsior bonded together with cement. It makes a hard 2-inch-thick sheet with good insulating and fire-resistant qualities. Like wood, it can be painted, and other materials can be nailed to it. On the shop building, the 4×8 sheets are supported by bar joists and receive a built-up tar-and-felt cover. The underside is painted and left exposed.

Asbestos ceiling

In the noisier areas of the buildings, an asbestos fiber plaster is sprayed on the metal lath of the hung ceiling. Asbestospray, as the product is called, is a mixture of asbestos fiber and rock wool. A little cement is added to hold the fluffy stuff together. The mixture, along with a small amount of water, is blown onto the lath to a depth of 1 inch. Plasterers use plywood boards and cork squares to press the material into place. It is later sprayed with a light coat of water paint. The ceiling has excellent sound-absorbing qualities for such areas as activity rooms.

Personnel

Superintendent for Robert H. Smith & Co. was Irvin C. Clepper. His brother, Paul A. Clepper, was the engineer. The architect's representative on the job was John A. Evans.

THE END

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Careylastic Sealing Compounds have a long-established reputation for effectiveness in highway and airport joint-sealing. More than a half-century of research, development, and practical experience with expansion joints and related heavy construction materials back up the *warranty* under which Careylastic Sealing Compounds are manufactured and distributed.

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JET CAREYLASTIC is especially prepared for airports where jet fuel may come in contact with the paving. JET is impervious to jet fuel which makes it particularly desirable for maintenance of airports receiving or preparing for jet traffic. This is a hot-pour sealer which bonds and seals effectively immediately.

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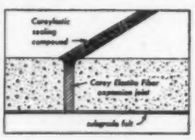

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Paving cross-section showing how Careylastic Sealing Compound is applied over expansion joint

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Names in the news

Maj. Gen. Lee B. Washbourne, Oklahoma state highway director.

Oklahoma Highways names Washbourne director

Maj. Gen. Lee B. Washbourne (USAF, ret.) has been named by the Oklahoma State Highway Commission to the post of state highway director. He succeeds C. A. Stoldt, who resigned.

Turnpike commission elects Lawler chairman

Joseph J. Lawler has been elected chairman of the Pennsylvania Turnpike Commission, succeeding G. Franklin McSorley who resigned. Lawler has been a vice chairman of the commission for the past two years.

Other new officers elected were E. James Trimarchi, vice chairman, and John F. Byrne, secretary-treasurer. Park H. Martin, state secretary of highways, serves as ex-officio member by virtue of his state office. Elections followed the naming of Lt. Gov. Roy Furman to the commission.

Judson G. Hyde, comptroller of Burns & Roe, Inc.

Burns & Roe elects

Judson G. Hyde has been elected comptroller of Burns & Roe, Inc., New York City engineers and constructors. Before joining the company, Hyde was treasurer-comptroller of Sperry Products, Inc., Danbury, Conn.

Stone & Webster news

William C. Pittam, engineer in the Industrial Projects Division of Stone & Webster Engineering Corp., Los Angeles, has been named project engineer in charge of work on the expansion of the Georgia-Pacific pulp and paper mill at Toledo, Ore. Pittam will head a staff of engineers transferred from other recently completed Stone & Webster projects.

Four top executives have been elected vice presidents of the corporation. They are Harold F. Cleary and Donald N. McCord, construction managers; M. H. Cutler, engineering manager; and William R. Prang, West Coast district manager.

Montana Highways names six to new positions

Louis Chittim has been named right-of-way engineer for the Montana Highway Department. He is succeeded as district engineer of the Butte District by Richard B. Dundas. George W. Tippetts, office engineer for the Butte Division, takes over Dundas' former post as division engineer. Don Parks assumes the post of assistant interstate engineer.

Myron Lockey, who retired as preconstruction engineer, is replaced by his former assistant, Cliff Thompson. Edward C. Miller heads up the new data-processing section of the department.

Ford, Bacon & Davis news

The new Pacific Coast office of Ford, Bacon & Davis, Inc., New York City, is being managed by John G. Lewis. The new branch of the engineering and business consulting firm is located at 235 Montgomery St., San Francisco.

Dravo division promotes

William A. Robinson has been named assistant general manager and chief engineer of the Contracting Division of Dravo Corp., Pittsburgh. A member of the firm for 25 years, Robinson was most recently assistant chief engineer.

Here's a demonstration right on this page!

AT THE DRAGLINE, the Cat DW20-PW20 Unit was confined to turning around in a 40-50 foot wide space. Despite the big size of the unit, it was able to make nonstop turns — a great advantage working in close quarters. The wide target of the PW20 helped decrease load time and increase payload.

HAULING, the Cat-built Engine combined with the 10-speed transmission of the DW20 enabled the big rig, with big loads, to negotiate soft haul road conditions for fast cycle times trip after trip. The Caterpillar DW20-PW20 unit's wide base tires provided excellent flotation both on the haul road and at the dumping area.

DUMPING, the PW20's steep sides (18 in. from vertical) and rear door enabled it to shed the sticky material with dispatch. The DW20-PW20 walked away from its load with minimum or no lost time. Use of high-tensile steel in the PW20's construction enabled it to handle heavy payloads.

Get the low-down on the new Cat DW20-PW20 Unit from this time and cost study

THE JOB: Simms Bayou Improvement, Houston, Texas. *Date*—March 13, 1959. *Contractor*—Lee and McKnight Contracting Co., Houston.

JOB CONDITIONS: *Material*—black gumbo and blue clay. *Density*—3000 lb./yard. *Haul length*—3,420 ft. (one way). *Grades*—none (two 90° turns). *Haul road conditions*—first 400 ft. with 300 lb./ton rolling resistance. Balance of haul road maintained—rolling resistance 150 lb./ton. *Loaded by*—dragline with 3 cu. yd. bucket.

AVERAGE LOAD TIME	3.44 min.
AVERAGE HAUL, DUMP AND RETURN TIME	7.17 min.
AVERAGE CYCLE TIME	10.61 min.
AVERAGE PAYLOAD (LB.)	78,633
AVERAGE PAYLOAD IN BANK YARDS AT 3000 LB./YD.	26.31
PRODUCTION ON A 60-MINUTE HOUR	
Trips/hour	5.65
Cu. yd./hour	148.65
OWNING AND OPERATING COST PER YARD	11.85¢
PRODUCTION AT 75% EFFICIENCY	
Cu. yd./hour	111.5
Cost/cu. yd.	15.8¢

The demonstration described and pictured here was made in comparison with competitive units. The new Cat DW20 Series G Tractor with new Athey PW20 Bottom Dump Trailer came through with high production at *lowest cost per yard.* As a result, the contractor purchased a DW20-PW20 Unit.

Consider the facts about this high-capacity rig. The DW20 Series G has a rating of 345 HP (maximum output). It hits top speeds of 35.8 MPH quickly for cutting cycle times. It provides maximum rimpull of 39,565 lb. for unmatched performance on adverse grades. The PW20, constructed of extra strength steel, has a struck capacity of 27 cu. yd.—and a maximum carrying capacity of 40 tons. Here's a matched pair designed to handle *more* work *faster* at *lower* cost per yard than ever.

For the complete time and cost study of this job, see your Caterpillar Dealer. Ask for a demonstration, too. That's the best way to judge what the big new DW20-PW20 can do on your job. Name the place and date—he'll demonstrate!

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

CATERPILLAR

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THE ONLY COMPLETE TRACTOR-TRAILER LINE... BY THE LEADERS

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Fast and easy goes the 2-week job of erecting the 145-foot-diameter geodesic dome for the new Citizens' State Bank in Oklahoma City, Okla. As workmen rivet the anodized aluminum panels around the edge, the dome is hoisted upward by cables stemming from the central mast. A hand winch at the base of the mast does the lifting.

Aluminum do

A 145-foot dome, topping drive-in bank, is easy to build, look at, and pay for

For a clear-span building, it's hard to beat an aluminum dome. The geodesic roof is easy to put up. The cost is reasonable. And the completed dome is good looking.

Following a growing trend for this type of construction, the architects designed the Citizens State Bank in Oklahoma City, Okla., to carry an aluminum dome. It is believed to be the first public building to use the new type of roof structure. And architects, contractor, and public are pleased with the results.

It's easy to build. With a small crew and a minimum of equipment, the contractor erected the 145-foot-diameter dome in two weeks' time.

It's inexpensive. The cost of the dome and supports was only about [illegible] per square foot of floor space.

It's strong. Although the dome is made of anodized aluminum panels .081 inch thick, it can stand winds up to 180 mph. The noncorrosive quality of aluminum guarantees the roof a long life.

It's beautiful. With its gold-colored

B.F.Goodrich

ON-THE-JOB TIRE SERVIC

at Glen Canyon Dam...

at Niagara Power Project

...at your construction job, too!

B.F.Goodrich on-the-job tire service is helping speed the construction of Glen Canyon Dam and Niagara Power Project—two of the country's biggest undertakings. *You* can benefit from this same fast, expert B.F.Goodrich service, no matter where you are or what the job.

Fully equipped Contractor Service truck

B.F.Goodrich Tire Service Men are trained to handle any type tire on any type equipment. We have the latest power tools—hydraulic cranes, pneumatic wrenches, bead jacks, etc.

We offer a special program of preventive tire maintenance—without obligation, of course—that includes complete tire inspection and programs for proper tire inflation and regular tire rotation.

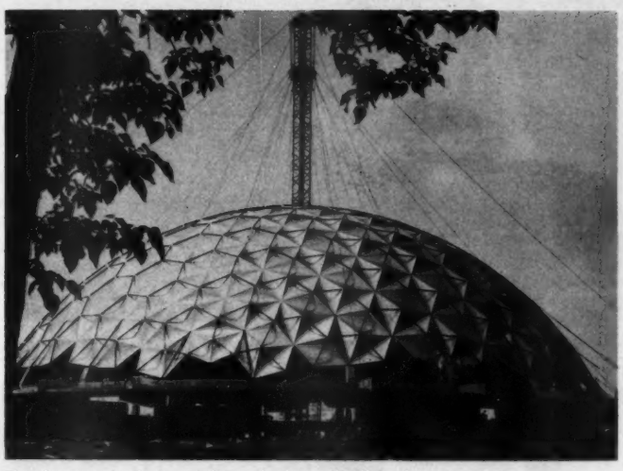
Save on downtime. Save on tire and maintenance costs. Call us the next time you need on-the-job tire service!

See us for B.F.Goodrich off-the-road tires and service, or check the Yellow Pages of your phone book for a more complete listing in your area.

Specify **B.F.Goodrich Tubeless or tube-type tires when ordering new equipment.**

B.F.Goodrich

...es up in two weeks



The dome waits for special panels that will fill in the area at the bottom. Aluminum 4-inch pipe makes the flexible connection between dome and pedestals of varying heights that stand along the ring beam. The ring beam itself, supported by 17 columns and two wall sections, stands 8 feet off the finished floor. Five guy wires hold the 110-foot-high mast plumb.

panels glistening in the afternoon light, the dome resembles a slice of the sun itself.

The $475,000 building was designed by Bailey-Bozalis-Dickinson-Roloff, architects of Oklahoma City. Secor Construction Co., Oklahoma City, was the general contractor. Kaiser Aluminum & Chemical Corp. furnished the raw panels for the dome, and Dale Benz, Inc., Phoenix, Ariz., fabricated, anodized, and erected the roof structure.

Located on a roomy site at the corner of 23rd St. and Classen Blvd., the circular building contains a partial basement with 4,500 square feet of floor space, a ground floor with 17,500 square feet, and a mezzanine (for future expansion) with 9,000 square feet.

For drive-in banking, there are four outside teller windows, with provisions for two more. There is also a window for walk-up banking. For those who prefer to do their business inside the building, they will find

(*Continued on next page*)

ALABAMA

...ADams 5-2571
...FAirfax 2-6361
...Liberty 6-5271
...JEfferson 6-2487
...HEmlock 2-2881
...AMherst 2-1661
...PLaza 8-6312

ARIZONA

...ALpine 3-6188
...MAin 3-3881

ARKANSAS

...POplar 3-0816
...TEmple 6-9334
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...409
...JEfferson 4-5123

CALIFORNIA

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CONNECTICUT

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DISTRICT OF COLUMBIA

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FLORIDA

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...MArion 2-4254
...GArden 2-3161
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...FAirfax 2-3981
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...TUrner 5-7438
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...MElrose 5-3407
...GRidley 2-2191
...2-2395
...CEntral 4-1144
...616

IOWA

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...2-2885
...CHerry 4-7270
...7-2761
...ADams 4-4040

KANSAS

...MOhawk 2-0261
...MAyfair 1-2206
...MAyfair 1-6515
...MUtual 2-2091
...TAylor 3-2271
...FOrest 3-1254

KENTUCKY

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MICHIGAN

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...REdwood 3-7536

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...EDison 3-4133
...BRoadway 2-3197
...TEmple 3-3831
...PArk 2-4119

NORTH DAKOTA

...ADams 2-7461

OHIO

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...CHerry 1-4050
...PRospect 1-2850
...CApitol 1-6661
...BAldwin 3-9181
...CH 5-5415
...LAfayette 4-5141
...FRontier 3-2066
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...FA 2-2401
...2-7171
...EL 7-7579
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...ATlantic 2-2785
...CHerry 3-1258
...HOward 2-0906

OKLAHOMA

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OREGON

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TENNESSEE

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...GReenwood 6-4573
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TEXAS

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...Circle 5-8329
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...TAylor 3-3078
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...MUrray 6-5354
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...YUkon 3-4567
...CApitol 7-7278
...LYric 4-6306
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...WOodlawn 8-2822
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WASHINGTON

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...DA 5-6123
...DIckens 6-0431
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...3168
...GArfield 2-6676
...CEdar 2-9690

WISCONSIN

...4-8065
...ALpine 5-4892
...Division 4-5206

B.F.Goodrich

Smileage!

...res and service

A Ford tractor with Davis loader and rear-mounted blade is distributing topsoil at the site of the drive-in bank to prepare for seeding.

(*Continued from preceding page*)

themselves standing in an elliptical-shaped lobby with the teller windows on one side, and the officers of the bank on the other side. The interior design reflects the clean curving lines of the outside. The huge ceiling of aluminum panels above the lobby is similar to the outside dome.

Dome on a doughnut

The 145-foot-diameter dome rests on 25 pedestals varying in height and spacing. The pedestals are sealed to a concrete ring beam that circles the building. The bottom of the ring beam is 8 feet above the finished floor. The beam is poured monolithically with a cantilever slab that overhangs the outside walls by about 10 feet.

The doughnut-shaped frame comprised of pedestals, ring beam, and cantilever slab, is held up by 17 columns and two wall sections.

The buttress-shaped columns, built of architectural concrete, are of a striking design. The diagonal lines on the sides of the columns were formed by wood strips nailed to the inside of the plywood forms.

Building the columns, and connecting them with the ring beam and cantilever slab, was one of the first stages of construction. As this work was being done, the partial basement was built and the ground slab poured. This left the structure ready to receive the aluminum dome.

A 110-foot mast, set up at the center of the building, was the only major piece of equipment needed to erect the dome. The numerous connecting cables stemmed from a carriage on the mast to lift the dome. The lifting force was applied by a hand winch located at the bottom of the mast.

Commencing at the base of the mast, workmen fitted together the individual diamond-shaped panels. As the dome grew, it was hoisted up by the connecting cables. Men continued to work at ground level. A color and number code, stamped on the panels, indicated their place in the structure.

Before each panel was put in place, it was strengthened with an aluminum channel strut. All connections were made with huck bolts. The aluminum rivets, commonly used in the aircraft industry, were shot in with a kind of gun. Connections at the corners of the panels were made with

This Cat No. 12 Motor Grader is undercutting banks down 28 inches deep in St. Anthony Village, Minnesota. Cutting both sides, it averages about 8 blocks a 10-hour day in compacted hardpan. Owner: J. A. Denens & Son, Inc., Minneapolis, Minn.

LOOK! THESE IMPROVEMENTS IN THE No. 12 PAY OFF IN EVEN HIGHER PRODUCTION!

Increased throat clearance · New blade, lift and circle · One-piece case for transmission and final drive · New, two-tooth power control clutches · New, positive mechanical lock

SINCE it was introduced twenty-one years ago, the Caterpillar No. 12 Motor Grader has earned the title "standard of the industry." Constant improvements have kept it the undisputed leader in its class. Here are the latest improvements that enable you to get even more work at lower cost with less maintenance from this high-production machine:

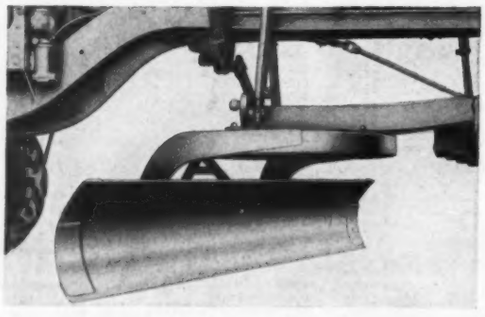
1 Clearance between the top edge of the blade and bottom edge of the circle has been increased to 5 INCHES. This provides improved rolling action, allows more material to move across the blade for greater production.

2 Blade thickness has been increased to ⅞ inch and blade beams have been increased in length and thickness to handle heavier loads. Lift arms have been lengthened and links shortened to enable operator to obtain all blade angles more easily. Circle reverse gear housing has been redesigned for better clearance as well as to increase the life of components and make service adjustments easier.

3 There's a new, stronger one-piece case for the transmission and final drive. This eliminates possible leakage at gaskets. In addition, transmission bearings have been strengthened for longer gear life.

4 New mechanical controls for reduced kickback, easier engagement. New power control clutches have two teeth, instead of four, and improved contact angles. They are more positive to engage, easier to hold in position.

5 New blade controls feature a positive mechanical lock—exclusive with Caterpillar. When the control is in neutral, the power shaft is locked by a set of gear teeth to prevent creeping.



See the improved No. 12 at your Caterpillar Dealer. Whatever the job, he has the right capacity motor grader for it. Besides the 115 HP No. 12, there's the big new 150 HP No. 14 and 75 HP No. 112. Ask for a demonstration!

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

CATERPILLAR

Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

STEP UP PRODUCTION WITH THE IMPROVED No. 12

For more facts, use Request Card at page 18 and circle No. 260

Workmen rub and wash down the concrete on the ring beam and canopy roof. Radial beams and cantilever slab were poured monolithically. At this point, a pipe support for the dome rests directly on the ring beam.

Plaster for interior walls is mixed in this Essick mixer. Triangular columns of architectural concrete support the ring beam and cantilever slab.

High winds tend to produce a lifting force on the dome. It's well tied down, however, and can stand winds of twice hurricane velocity.

Mezzanine

With the dome in place, construction proceeded on the mezzanine floor. This occupies the area between the elliptical lobby and the outside wall. The steel beams are supported on one end by pipe columns and on the other end by the concrete ring beam. Spanning the distance between the beams are steel bar joists which support a Steeltex decking and 2½ inches of poured concrete.

Superintending the job for Secor Construction was Pete Novak. Supervising the construction for the architect was Bob Roloff. THE END

the help of star-shaped castings on the underside of the roof. The seams were pinned together with the huck bolts and later calked to make the roof watertight.

The big dome quickly unfolded, and was hoisted to the tops of the pedestals. The tie between the pedestal and the dome was made with a 4-inch aluminum pipe. The top of the pipe was bolted to an aluminum casting. The bottom was tied to the pedestal with a bolt-and-eye connection. The flexible joint allows for dome movement caused by temperature change.

Draft eliminates condensation

Actually, the completed dome is not sealed off from the outside air. A gap between the aluminum and the concrete ring beam permits outside air to circulate up along the inside of the roof to an exhaust fan at the top of the dome. The circulating air prevents condensation on the inside surface of the aluminum. Because the cool air coming in from the outside is confined to an "attic area," the building can be heated without difficulty.

Pete Novak, superintendent for the contractor, stands on the ring beam at the base of one of the pedestals. The bolted connection at the base of the 4-inch pipe supporting the dome allows for expansion movement. The gap between dome and ring beam allows air to circulate inside the dome, and a fan at the top blows it out. This prevents condensation inside the dome.

Goodyear firm buys interest in rubber plant

■ A substantial interest in a new synthetic-rubber plant being built by Australia Synthetic Rubber Co., Ltd., has been acquired by The Goodyear Tyre & Rubber Co. (Australia) Ltd. Located at Altona near Melbourne, the $11 million plant will have a yearly capacity of 30,000 long tons of styrene-butadiene rubber when completed in July, 1961.

Stardrill-Keystone news

■ The Stardrill-Keystone Co., a recently acquired division of Koehring Co., has moved from Beaver Falls, Pa., to 1210 Kenton St., Springfield, Ohio. The division will occupy 189,000 square feet in a plant already established by another Koehring division, the Buffalo-Springfield Co.

Stardrill-Keystone manufactures construction, quarry, water-well, oil, gas, and mineral drills.

Fageol buys new plant

■ A 100,000-square-foot plant in Kent, Ohio, has been purchased by R. D. Fageol Co., maker of flasher safety lights. The 5-story structure, about four times larger than the previous plant, is being remodeled by Fageol. Equipment and personnel are being moved into the new plant without interrupting production.

A calendar of coming conventions appears on page 85 of this issue.

In Atlanta, it's BMCO for 100% compaction . . . quickly, easily

Federal Aid Project
No. 1 - 401 - 2 (13) Contract #1
Atlanta Downtown Freeway

"This is one of the first jobs in Georgia where 100% compaction is required. The Contractor is having no trouble getting compaction when the moisture is anywhere near optimum."

Ted Smith
Highway Engineer

Specified density on this project was easily met with a BMCO Model HD-114, triple-drum sheepsfoot roller, followed by a BMCO Model SPR-13, self-propelled pneumatic tired roller. An additional pass with the triple-drum roller made the fill bondable for the next layer.

"This proceedure," reports Grading Contractor Harry D. Gregory, "gives us an accelerated compaction rate for required 100% compaction."

It will pay you to investigate BMCO before you invest in any compaction equipment.

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For more facts, use Request Card at page 18 and circle No. 261

Tricks of the trade

Motor graders used to backfill trench for air-base project

When deep utility trenches must cross the alignment of airport runways, the placing and compaction of the trench backfill is always one of the contractor's big problems. To prepare for the new runways at Amarillo Air Force Base, Texas, the contractor used two motor graders on the backfilling and two tractor-drawn rollers for the compaction in the trench.

One of the motor graders was a Cat No. 12 equipped with a Domore elev- tor. The other grader, a Cat D started the operation by taking a c out of the spoil bank and laying it in a windrow. The elevating gra followed, casting the windrow b the trench. The operation was r peated on succeeding passes. W the windrow had been moved over the top of the bank, the Domore c it over the edge and into the tren This laid a thin lift of backfill the f length of the trench ahead of t compaction equipment.

The first of the compaction rigs w a Cat D7 tractor-dozer pulling Tampo sheepsfoot roller. The d leveled out the fill as it was plac and the sheepsfoot started the co paction. Behind it came an Interna

tional WD-9 wheel tractor pulling an Essick vibratory roller. These two rigs operated continuously back and forth in the trench until it was completely filled.

The compaction equipment came up a ramp to ground level to turn around at the end of each pass. The motor graders worked only one direction, shifting into high gear and returning to the starting point at the conclusion of each pass. When water was needed in the compaction, it was added by a water truck as the graders were moving the material from the spoil bank to the trench.

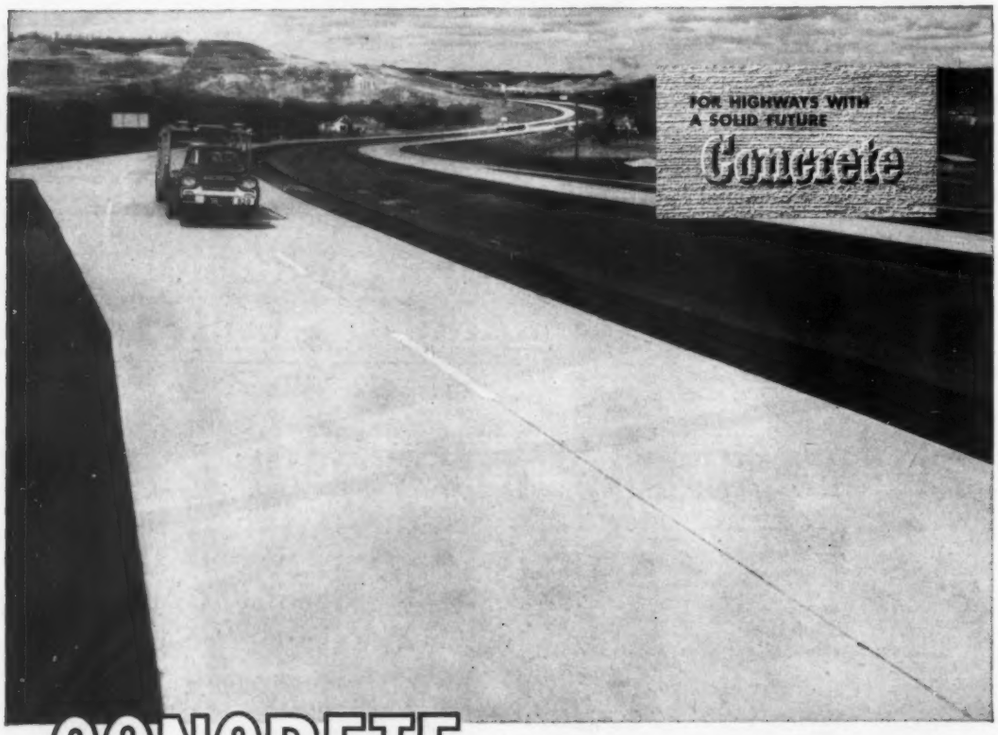
This work was one of the preliminaries in a $12 million runway construction contract being done by T. L. James and W. R. Aldrich, Alexandria, La. The work is being supervised by the Tulsa District of the U. S. Army Corps of Engineers.

Big shovel moved over county highways without dismantling

Moving a 2½-yard shovel ordinarily means a dismantling and reassembly of the big rig. However, Morrison-Knudsen Co., Inc., found that it could move a Northwest 80-D shovel-dragline over county highways from one part of a job to another using two big low-bed trailers in parallel.

The two Peerless trailers, pulled by White Freightliner trucks, were lined up side by side and headed in the same direction. The shovel walked up a ramp onto the two trailers, its tracks taking practically the full width of both beds.

Since the two trailers and the shovel took up almost the complete width of the county highway, it was



CONCRETE will save taxpayers $2,835,000 on the first 39 miles of North Dakota's Interstate 94!

North Dakota chose concrete to get the big savings where they count most—on upkeep

On the 39-mile stretch between Jamestown and Valley City—and for other sections of the Interstate System—North Dakota had good reasons for choosing concrete. *Concrete means tax savings and real dollar value.*

In North Dakota it was found that by comparing amortized first costs plus surface maintenance costs for concrete and asphalt, *concrete will save $72,200 per mile in 35 years.*

Estimates were based on maintenance costs shown in an official study of pavements in 28 reporting states. And because the asphalt design being considered would require two resurfacings, this cost was figured in, too. Bureau of Public Roads life expectancy studies gave the schedule for such resurfacings. Final figures evidenced impressively the sizable year-after-year savings provided by concrete!

The reasons are simple enough! Concrete needs no special seal coatings, no periodic resurfacings—both costly items. There's far less routine maintenance, too.

Concrete is nonflexible . . . it has *beam* strength it never loses. In fact, concrete grows stronger year by year. Modern, air-entrained concrete gives built-in protection against damage caused by freezing and thawing.

Concrete highways 35 years old are a matter of record. Today's modern concrete promises 50 years and more of smooth going for drivers. Thrifty concrete on the Interstate System leaves more funds for other highways. Concrete means true economy for taxpayers, both today and in the future. It's easy to see why concrete is the preferred pavement for important highways.

PORTLAND CEMENT ASSOCIATION
A national organization to improve and extend the uses of concrete

necessary for flagmen to control all traffic. Taking advantage of periods of light traffic, and with cooperation from the county officials, Morrison-Knudsen made the moves without incident.

The drivers of the two trucks had anticipated that they would have some difficulty keeping their rigs together. They soon found, however, that the heavy shovel had them securely locked in position; all they had to do was steer in unison.

This interesting and time-saving operation took place on M-K's work on Stages 1 and 4 of the railroad relocation contracts preliminary to the construction of Howard A. Hanson Dam (formerly known as Eagle Gorge Dam) on the Green River near Kanaskat, Wash.

Contractor-built shelf on cofferdam wall is platform for pump

An easy-to-build shelf, clinging to the cofferdam wall, provides a convenient operating platform for this Jaeger 3-inch sump pump.

Since it is on the platform, the pump is not in danger of being drowned out by fast-rising waters. The pump is out of the way of excavation, yet it is easily accessible. The

platform can be reached from the top of the cofferdam by means of the ladder that has been built into the frame.

The frame, built of welded rebars and angles, hooks onto the top wale. The platform itself is built of wood planks. The contractor has arranged the platform so that it rests in an angle frame.

The 58-foot-wide cofferdam is being driven to permit the excavation of approaches to the open-cut vehicular tunnel under the Intracoastal Canal in Houma, La. Baltimore Contractors, Inc. of Baltimore, Md., is the general contractor.

For more facts, circle No. 262→

Steel bands brace floor formwork for new building

Steel bands are used to brace the floor formwork on this 3-story reinforced-concrete building in Indianapolis, Ind.

The bands hold the floor forms, on the outside edge of the building, in toward the column. In this case, a beam on the column line breaks the continuity in the plywood forms. This makes it necessary to tie the exterior floor forms to the interior forms. Rather than make the tie on top of the forms, the contractor finds it more convenient to make the tie between the base of the column and the outside stringer supporting the floor forms.

Since the columns are poured up to the drophead before concrete is placed for the floors, the columns can be used as a tie. Three Signode 1¼-inch bands run from the lower column clamp to one-third points on the outside stringer. The 4×6 stringers are held in place by Baker Roos adjustable shores.

Lynn Shackelford, superintendent for Baker Forms Co., Indianapolis, is regarding his handiwork.

engine power BY CATERPILLAR NEW

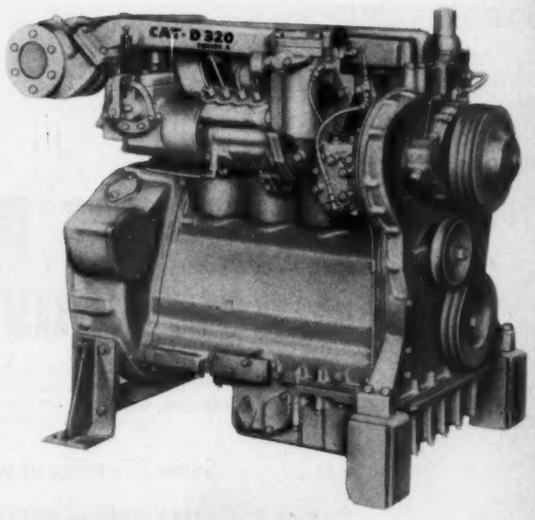
Caterpillar announces the D320—a high performance, lightweight, compact 120 HP Diesel Engine for ¾ yard excavators, small portable rock crushers, road rollers and 250 CFM rotary compressors. The D320 Electric Set is ideal for area lighting, standby and portable batching plants.

The Caterpillar D320 is a brand new four-cycle, four-cylinder, valve-in-head, precombustion chamber, turbocharged diesel. It is the most modern package of 120 HP you can find to power your equipment. As an electric set, it gives you 40 KW in a compact configuration.

The D320 weighs in at only 1,300 pounds, is just 44" long, less than 28" wide and just 36" high. With these compact dimensions, you can easily install the D320 on present equipment. It may make it possible for you to raise equipment profitability with increased HP—even though space is limited and weight must be held down.

And of course you get traditional Caterpillar Engine dependability, operating economy, maintenance ease and long life. This is a *heavy-duty* engine in every way.

Your Caterpillar Dealer has a lot more information on the D320. It's profitable information to have if you're considering repowering, ordering new equipment, or if you're planning to add a 40 KW portable electric set. Ask your Dealer's Engine Specialist for complete specifications. Also, write us for more detailed facts, and let us know the kind and size equipment you have in mind.



OTHER RATINGS

The ratings on this page are published as a general guide for world-wide use in a broad range of applications. Other ratings, yielding gains in performance and economic return, are available to meet the needs of particular applications when detailed information is submitted.

CATERPILLAR

Engine Division, Caterpillar Tractor Co., Peoria, Ill., U.S.A.

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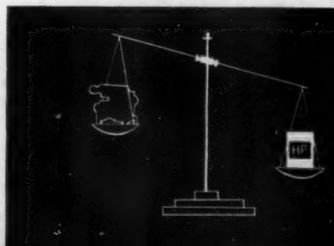
Ratings shown are for D320 with Turbocharger and Aftercooler, which is added for maximum engine output.

Every Cat Engine is built to rigid Caterpillar standards and carefully tested prior to delivery. Workmanship and power output capacity are certified.



D320 HORSEPOWER RATINGS*

Maximum Output Capacity	120 HP	2400 RPM
Intermittent	95 HP	2400 RPM
Continuous	75 HP	2000 RPM

*WITHOUT FAN

The 160-foot-diameter steel containment sphere dominates the Consolidated Edison nuclear power plant at Indian Point, N. Y. This portion required a shielding wall supporting reinforced-concrete dome ribs. The top of the wall is prestressed with wire. In the foreground, precast-concrete girders are formed for the shield roof. At right are the conventional portion of the plant, the discharge channel, and the area for the screen well building.

Nuclear plant demands new construction ideas

Some 275 miles of wire used in prestressing shielding wall; new anchoring method worked out for carriage of winding machine

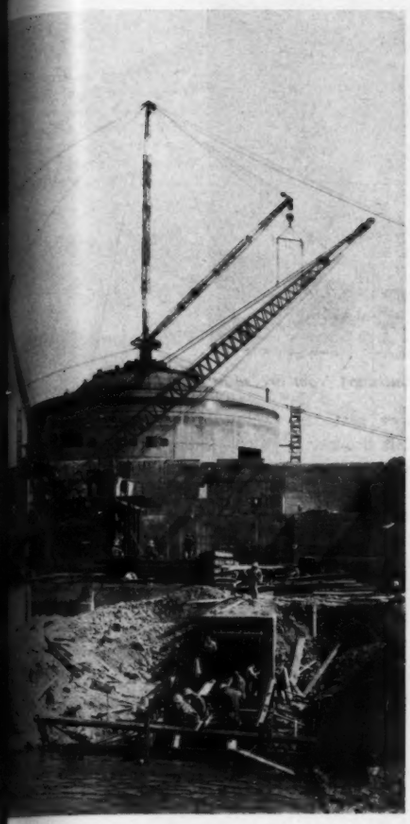
by Anthony N. Mavroudis, field editor

Many interesting techniques are being tried in the construction of the $100 million nuclear power station being built by the Consolidated Edison Co. of New York, Inc., at Indian Point in Westchester County. One of the biggest jobs at the plant—and one which required some tricky construction—was on the 160-foot-diameter steel containment sphere and its external concrete shielding wall and dome.

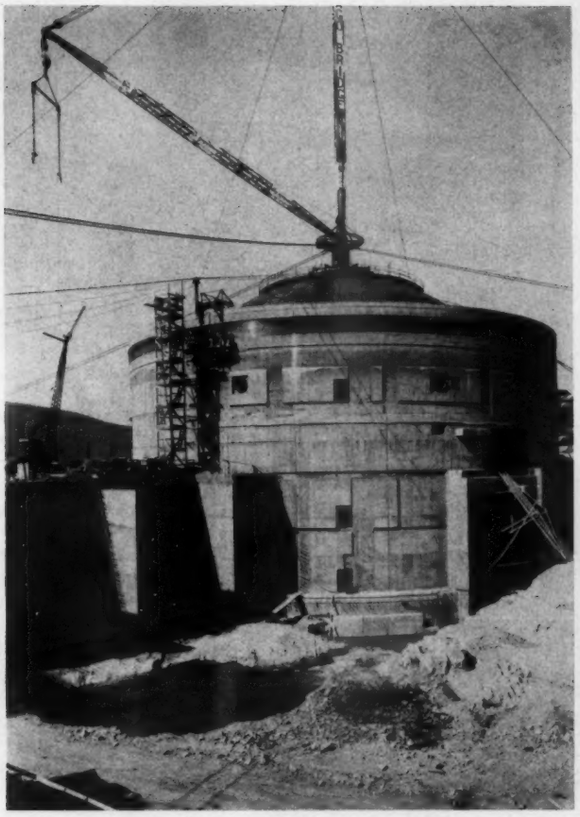
Wall prestressed

Walsh Construction Co., New York, N. Y., is the contractor for the 181-foot-diameter shielding wall. The wall will support 24 precast, reinforced-concrete dome ribs forming the roof over the steel sphere. These 4 to 5-foot-deep ribs, curving up from the top of the wall toward the center of the dome, will be tied to a steel compression ring at this point and later encased in concrete. Smaller tapered, precast-concrete sections that will fill the spaces between the ribs will later be grouted.

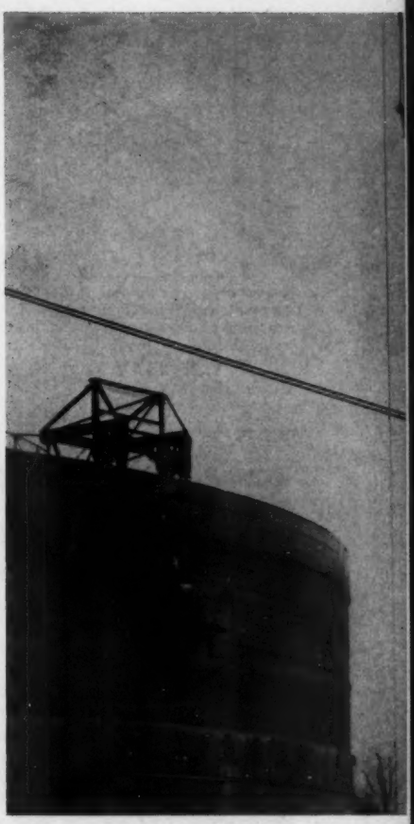
The bottom 70 feet of the 90-foot-high cylindrical shielding wall measures about 5½ feet in thickness, while the top 20 feet is widened inwardly to 7 feet 6 inches. It is this widened section that has been prestressed; about 275 miles of prestressing wire was wrapped in a 3-inch chase that



of the steel sphere is done by a 100-ton derrick with mast and 135-foot boom. It works atop a 7½-foot-di- 171-foot-high column. When its job is done, the derrick dismantled, lowered into the sphere, and removed hatchway. Men work on the intake and discharge.



Some 275 miles of prestressing wire is being wrapped around the top of the shielding wall by a self-propelled gasoline-driven machine hung from the wall. Water trapped in excavation, foreground, is being removed by a Midland 3-inch pump. Excavation is for waste storage tank in treatment building to be built adjacent to the shielding wall.



The prestressing wire was wrapped in 7 layers around the 181-foot-diameter, 90-foot-high shielding wall. Each layer was covered with gunite flashing. The wire was drawn to .174 inch for a stress of 125,000 psi.

st in the outer surface of the wall. The chase is 4 feet 3 inches below the p of the wall and extends 15½ feet wn the side of the cylinder.

Preload Concrete Structures, Inc., Westbury, N. Y., handled this phase of the work for Walsh Construction. Preload wrapped the prestressing wire ound the cylinder with a self-pro- lled gasoline-driven machine sus- nded from a carriage that traveled ound the top of the wall near the uter edge. The wire was wrapped in even layers, at a rate of roughly one yer per week, with each layer aver- ging 386 complete turns. About 35 ls of U. S. S. spring-steel wire were quired to complete this operation.

Pneumatic gunite flashing was ap- lied over each layer. During this op- ration, the end of the wire was fas- ned to the wrapped wire by anchor ips so that the required tensile load as maintained in the strand.

The .192-inch-diameter wire used as drawn to .174 inch as it was rapped around the cylinder. This rawing operation imparted a stress f 125,000 psi in the wire, and this re- lted in a total ultimate inward force f 7,120,000 pounds on the structure. This force will counteract the hori- ntal forces exerted by the roof dome nd will also withstand forces result- g from difference in inside and out- de wall temperatures.

In prestressing a structure of this type, the carriage supporting the wire-winding machine is normally secured to cables anchored to the ground inside the cylinder. In this case, however, work on the steel containment sphere was in progress during winding, and a special anchoring method was devised.

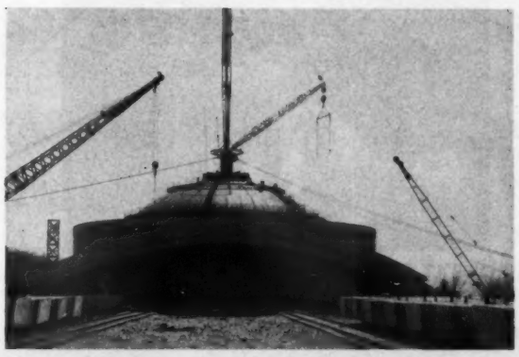
An 8-inch I-beam was fastened to the top of the cylinder wall along the inner edge, and the trolley that supported the wrapping-machine carriage traveled this beam. To install the I-beam, the contractor cast anchor rods in the wall and, since the beam was installed along a beveled surface, tapered blocks were fastened to these rods to provide a horizontal surface for the beam. The carriage rode around and was held against the wall by means of an endless chain placed about halfway down around the chase.

Dome ribs

The ribs for the roof dome were precast adjacent to the shielding-wall area. The contractor used two sets of steel forms to shape the curved ribs with ready-mix concrete. A steel H-beam is embedded at the bottom, which permitted the connection with the steel compression ring at the top center of the dome.

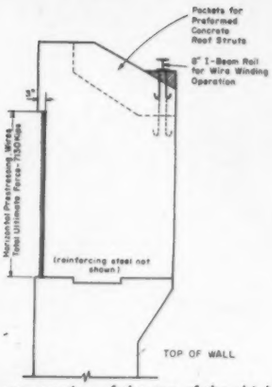
The other end had heavy reinforc-

(*Continued on next page*)



Tracks laid in the precasting area facilitate the stockpiling and positioning of roof arch girders. These will be tied to a steel compression ring and encased in concrete. Smaller precast sections will fill the spaces between the ribs.

Contractor-built carriages, located on the tracks on both sides of the arch girders, are equipped with a pair of jacks and a winch so that the ribs can be raised from forms and stockpiled.


Pockets for Preformed Concrete Roof Struts
8" I-Beam Rail for Wire Winding Operation
Horizontal Prestressing Wires Total Ultimate Force-7150 Kips
(reinforcing steel not shown)
TOP OF WALL

A cross section of the top of the shielding wall shows the area of the wire wrapping and the special I-beam installation to support the carriage of the wire-wrapping machine.

The arched roof girders [illegible] precast in steel forms [illegible] stockpiled near the containment sphere. Sections will be positioned with the [illegible] shown here tied to a [illegible] ring at the top of the dome.

(*Continued from preceding page*)

ing steel exposed, and this was seated in the 24 preformed pockets around the top of the cylindrical shielding wall. These pockets were later filled with concrete to structurally tie the ribs and wall together.

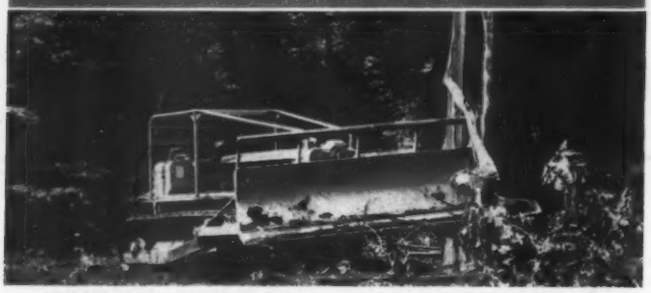
Narrow-gage rail tracks were laid along the precast area to facilitate the moving of the completed ribs. A contractor-built carriage, equipped with a pair of jacks and a winch, was located on a track on each side of the ribs. The jacks were used to raise the completed ribs from the forms, and the winch was used to move the [illegible] along the tracks to a storage [illegible] away from the forms. The tracks [illegible] to a point immediately adjacent [illegible] the shielding wall. This allowed [illegible] contractor to move the ribs right [illegible] to the wall. From here, ribs [illegible] raised into position.

Steel sphere

Chicago Bridge & Iron erected [illegible] 160-foot-diameter steel containment sphere inside the shielding wall. [illegible]

(*Continued on page 2[illegible]*

CLEAR LAND THE ROME WAY



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Scari Plows are built either as conventional drag type or in wheel controlled model where easy maneuverability and transport is desired. All are available with conventional white iron bearing or with oil bath axles with greater under-axle clearance which provides up to 35% more blade wear on thousands of such Towner units now operating. Over 40 years of experience building heavy-duty equipment insures quality engineering and excellent trouble-free operation from Towner Products.

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Steelwork is in progress on the superheater building, and concrete trenches are being built to house discharge and intake lines. In this area, concrete trenches were required to support service buildings. The dock in the background will serve as the screened intake supplying the circulating pumps.

(*Continued from page 24*)

concrete pad was poured on rock, at the bottom center of the sphere, to support the 7½-foot-diameter 171-foot-high tower that supports the 100-ton derrick. This derrick, having a 176-foot mast and a 135-foot boom was guyed with 8 top guy wires and four pairs of intermediate guy wires. These were anchored to a total of eight deadmen, four holding the four pairs of intermediate guys and four top guys, and four holding the remaining top guys.

The column supporting the derrick was erected by a jib boom riding up the column as sections were placed. Once the column was completed, the boom and mast sections of the 100-ton

American Cyanamid news

■ Bradford E. Bailey has joined the project engineering department of American Cyanamid Co., New York City. As the department's principal project engineer, Bailey will work with a team assigned to the company's new melamine-crystal plant at Wallingford, Conn.

Parker-Hannifin assigns

■ W. O. Murray has been appointed product manager of hose and hose fittings by Parker-Hannifin Corp., Cleveland. He will promote field sales and supervise the inside order department and inventory. Murray was formerly manager of distributor sales in the Pittsburgh, Buffalo, and West Virginia area.

Robert N. Boucher has been named manager of distributor sales for the Philadelphia district, that is comprised of eastern Pennsylvania, Maryland, and Delaware. He continues as manager of government field service for the company contracts in Washington, D. C., and with various major government facilities elsewhere.

C.I.T. appoints Laing

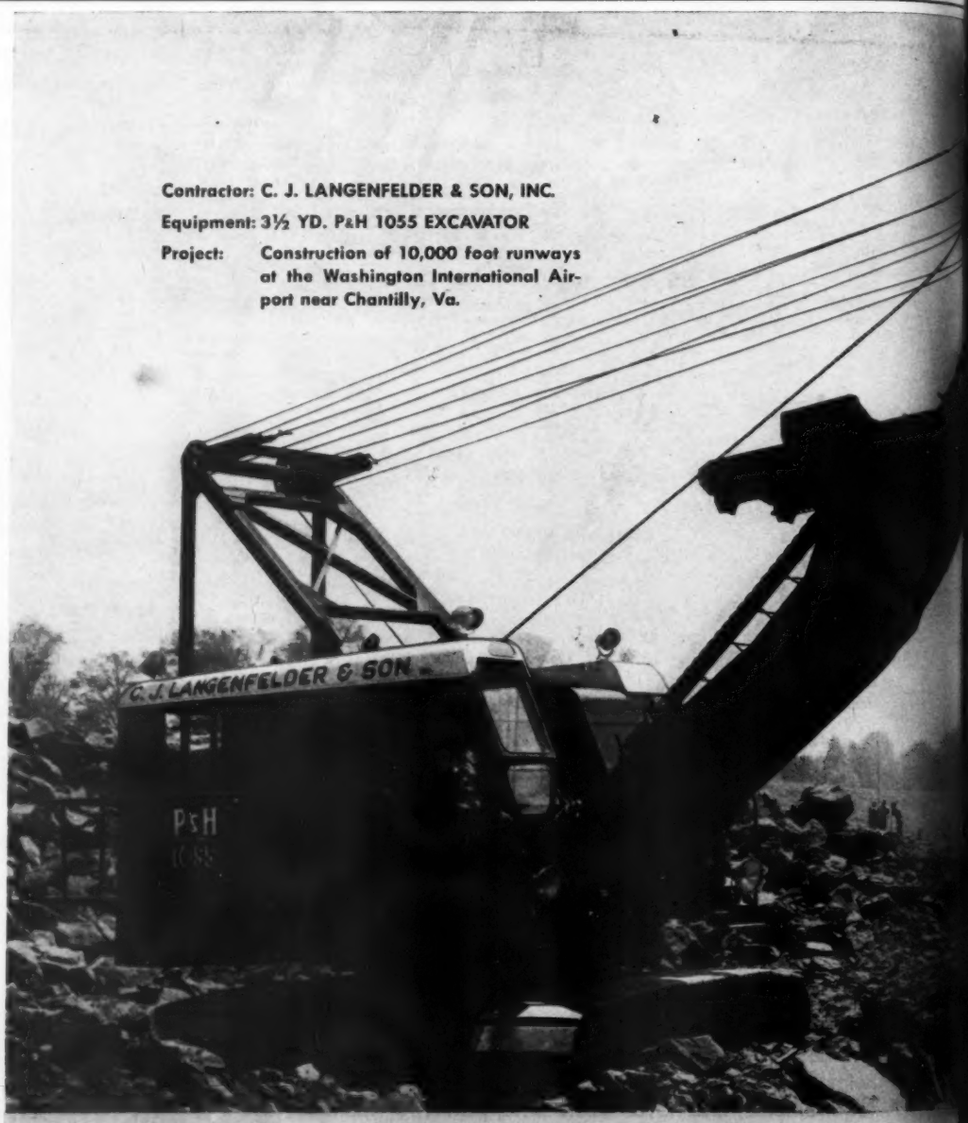
■ John E. Laing has been named southern Oregon representative for C. I. T. Corp., industrial financing firm, Detroit. From Portland headquarters, Laing will maintain personal contact with business and industry in 20 Oregon counties.

GE department names

■ Dale L. Bunday has been appointed national product-planning manager for two-way radio equipment engineered by the Communication Products Department, General Electric Co., Lynchburg, Va. Bunday succeeds Robert L. Casselberry, who has been named acting manager of the firm's Technical Products Operation at Syracuse, N. Y.

Bil-Jax appoints

■ Olen L. Britsch has taken an executive position with Bil-Jax, Inc., Archbold, Ohio. He has been secretary-treasurer of the scaffold-producing firm since its organization in 1946. Britsch continues as an officer and director of the corporation.



Contractor: C. J. LANGENFELDER & SON, INC.
Equipment: 3½ YD. P&H 1055 EXCAVATOR
Project: Construction of 10,000 foot runways at the Washington International Airport near Chantilly, Va.

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When you bid a job today, you figure it to the bone. Once you get the job, you rely men and machines to bring it in at a profit.

That's where P&H excavators come in. With a 3½ yd. P&H 1055 excavator doing the digging, you can count on those "cost you getting off the job early. The minute you a job you can see those "P&H Profit-Ya being dumped into the trucks early in the

Profitable digging is characteristic of excavators. There are plenty of reasons and they are all performance. It's the of the P&H rapid reversing chain crowd gives positive dipper action into the bank

derrick were hoisted up to the top and moved into position by the jib boom, located on a temporary platform set up at the top. The hoisting engine powering the derrick was located away from the sphere, and the lead lines run over the sphere and shielding walls to the base of the derrick.

Steel columns, 41 feet tall, were spaced on 18-degree 30-minute centers around the inside of the shielding wall to support the sphere. The columns are supported on concrete bases founded on rock. The columns were erected with equator plate sections already welded to the columns. From these plates the bottom plates were welded through the top plates. After the erection of the sphere is completed, the derrick will be dismantled, lowered into the sphere through a hole at the top, and removed through one of the entrance hatchways.

Other contracts

Poirier & McLane Corp., New York, N. Y., handled the 45,000-cubic-yard rock excavation at the site and is presently working on the concrete foundations for the conventional part of the plant.

Ingalls Steel Construction is erecting the structural steel for the conventional plant and will erect a 335-foot-tall steel stack.

The reactor, manufactured by the Babcock & Wilcox Co., and the nuclear boiler will be installed inside the steel sphere. The nuclear reactor will raise the temperature of incoming water to 518 degrees F at 1,500-psi pressure. This superheated water will be used to generate steam in the nuclear boiler. The steam, at 405 psig, will be generated at a temperature of 449 degrees F.

This steam will leave the sphere through piping and pass through the superheater building—which is equipped with two Foster Wheeler superheaters. The temperature at the turbine-generator throttle will be 1,000 degrees F, at a pressure of 355 psig. The Westinghouse turbine-generator consists of a tandem-compound, double-flow 1,800-rpm turbine and a 275,000-kw generator mounted on the same turbine shaft.

After activating the turbine, the steam will be condensed by an Ingersoll-Rand 2-shell, single-pass condenser located in a pit below the turbine-generator building. It then will be picked up by four 62-inch-diameter discharge lines. Two additional 72-inch-diameter discharge lines will carry some of this heated condenser water to the intake screens for de-icing purposes.

Two 86-inch-diameter water lines will supply the condenser with circulating water. Two Ingersoll-Rand pumps, each with a 140,000-gpm capacity, will be housed in a screen well house to handle this chore.

Discharge tunnel

The four 62-inch discharge lines will empty into a tunnel, measuring 30 feet deep and 35 feet 8 inches wide. Within the conventional area of the plant, the tunnel is roofed over to support a service building. Since the tunnel runs between the screen well building and the condenser pit, all the intake and service lines had to be passed through the tunnel section.

Sections of the intake lines, between the screen well and the tunnel, were laid in concrete trenches and covered with a sand backfill before being roofed over with a concrete slab. This was done, together with the driving of timber pile supports, to permit the location and support of the plant's transformers.

Personnel

John G. Sweetman is the resident engineer, and B. Hubay and Frank R. Wadleigh, the assistant resident engineers, for Consolidated Edison.

Dave Cowger is the superintendent for Walsh, and Jim Quinn and Ed Moffett are the superintendents for Poirier & McLane; Gene Lewis is superintendent for Ingalls Iron Works, and H. O. Hanks, the superintendent for Chicago Bridge. THE END

Managers, sales staff named by Trailmobile

■ Regis F. Wehner has been appointed manager of the Syracuse, N. Y., branch of Trailmobile, Inc., Cincinnati. The company also named John Calloway to the sales staff of the Sacramento, Calif., branch.

Charles A. Robinson has been appointed sales representative at the New Orleans branch; Nathan Cox, at Charlotte, N. C.; and Howard N. Rogers, at Los Angeles.

Hugh A. MacKay has joined the New Haven, Conn., branch. George C. Dennis has been promoted from service manager to sales representative at the New Orleans branch. Robert M. Schwarz has joined the company as sales representative at the Birmingham, Ala., branch. James A. Hassberger has been appointed sales manager of the Springfield, Mo., tank plant.

←For more facts, circle No. 267

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NEFF MACHINERY, INC. Miami 27, Fla.
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TRI-STATE TRACTOR CO. Atlanta 1, Georgia
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KORTE BROTHERS, INC. Fort Wayne, Indiana
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DUKEHART-HUGHES TRACTOR & EQUIPMENT CO., INC. Des Moines 13, Iowa
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PECAUT INDUSTRIAL SUPPLY CO. Sioux City 1, Iowa
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LUTHERVILLE SUPPLY & EQUIP. CO. Lutherville, Maryland
ESCHENHEIMER CORPORATION Brighton 35, Massachusetts
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J. R. PANELLI EQUIPMENT CO., INC. Detroit 41, Michigan
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P. H. MACHINERY, INC. Duluth 6, Minn.
H. C. ORMES CONST. EQUIP. CO. Minneapolis 18, Minnesota
ALLIED EQUIPMENT, INC. Jackson, Mississippi
MISSOURI-ILLINOIS TRACTOR & EQUIP. CO. Robertson, Missouri
SEITZ MACHINERY CO., INC. Billings, Montana
TREASURE STATE EQUIPMENT CO. Kalispell, Montana
HIGHWAY EQUIP. & SUPPLY CO. Lincoln, Nebraska
A-D MACHINERY CO., INC. Elko, Nevada
NOBLE-BELISLE MACHINERY, INC. West Lebanon, New Hampshire
C. A. LIPPINCOTT & BRO., INC. Moorestown, New Jersey
JOHNSON & DEALAMAN, INC. Newark 5, New Jersey
CONTRACTORS EQUIP. & SUP. CO. Albuquerque, New Mexico
CONTRACTORS' SALES CO., INC. Albany 4, New York
MUNICIPAL MACHINERY CO., INC. Coram, New York (Long Island)
CONSTRUCTION EQUIPMENT CORP. Long Island City 1, New York
RALPH C. HERMAN COMPANY Marlboro, New York
P-D SERVICE, INC. Pavilion, N. Y.
CREDLE EQUIP. POTSDAM CORP. Potsdam, New York
CREDLE EQUIPMENT, INC. Utica, N. Y.
BUCK EQUIPMENT COMPANY Statesville, N. C.
GENERAL DIESEL & EQUIP. CO., INC. Fargo, North Dakota
BOARDMAN MACHINERY COMPANY Oklahoma City 7, Oklahoma
LOGGERS & CONTRACTORS MACHINERY CO. Portland 14, Ore.
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PECAUT EQUIPMENT COMPANY Sioux Falls, South Dakota
OSBORNE EQUIPMENT COMPANY Knoxville, Tennessee
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RISH EQUIPMENT COMPANY Fifteen Branches in Ohio and the Virginias
DROTT TRACTOR COMPANY, INC. Milwaukee 3, Wisconsin
WILSON EQUIPMENT & SUPPLY CO. Cheyenne, Wyoming
HONOLULU IRON WORKS CO. Honolulu, T.H.

Labor review

New York teamsters go back to work, ratify sand-gravel pact

Members of Teamsters Union Local 282 ratified terms of a 2-year settlement with 50 concrete, sand, and gravel suppliers in the New York City area to end a strike which began July 1 and seriously disrupted building work and employment in New York and Long Island.

The 1,200 drivers voted to accept the 37½-cent hourly wage increase that was the employers' third offer during the lengthy negotiations. The new hourly rate of $3.50 gives drivers $140 for a 40-hour week.

Also included in the settlement was a 5-cent hike in employer contributions to welfare and pension funds, and an improvement of vacation allotments to give drivers one day for every 15 days worked, up to a maximum of three weeks per year. Drivers with ten years of employment would receive the 3-week vacation after 150 working days. The welfare and pension hikes bring the weekly employer contribution to the two funds to $11.40 per employee, according to a union spokesman.

Western teamsters want construction pact to cover 13 states

Western teamsters aimed their sights at area-wide construction-industry contracts that would standardize wages and working conditions for union members in 13 western states.

Reporting to delegates at the Western Conference of Teamsters, Conference Chairman Einar O. Mohn said: "... we must perfect existing relationships with other labor organizations in the construction industry. Through such cooperation and the medium of area contracts we can accomplish our basic objective which is organization and getting contracts that provide uniform wages and working conditions."

Mohn pointed out that "relatively few general local unions in our Conference are not concerned with construction, so this Building Construction Division needs wide support." He adds:

"It remains a fact that most heavy construction is being done by a few large national corporations. As a consequence we must deal with them on a broad basis. It should be kept in mind that many millions of dollars are being spent for construction in sparsely populated areas so we must lend aid and assistance to our unions in those places."

Pursuing the need for more emphasis on construction, George R. Purvis, secretary of the Building Construction Division, held "high hopes" for making the Division "one of the strongest and most effective in the Western Conference of Teamsters." Purvis echoed Mohn's plea for greater contract uniformity, explaining:

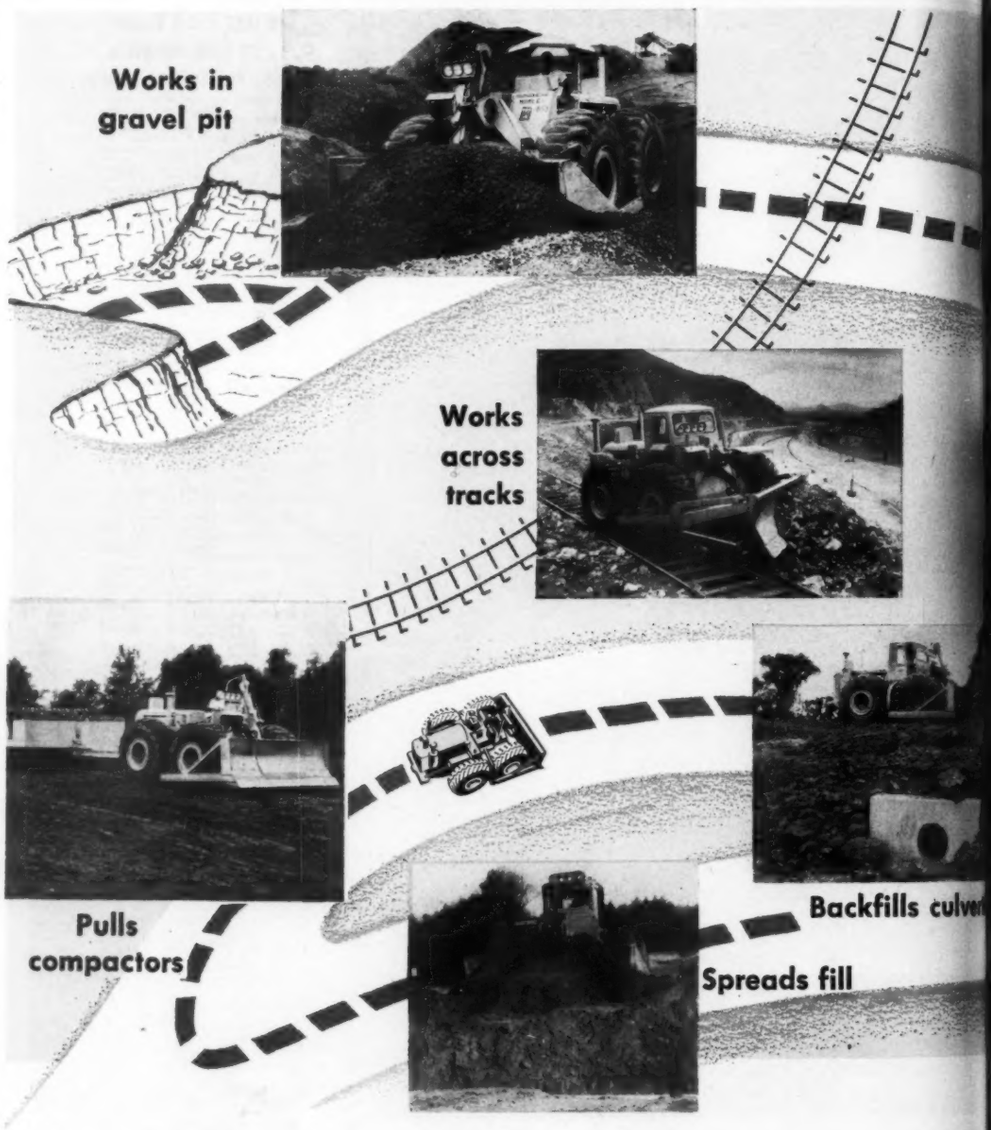
"A survey of what is going on, or in the blueprint stage, building-wise, emphasizes the point that the bulk of heavy construction is done by four or five big contracting firms which accept projects located, at times, hundreds, even thousands, of miles apart. Since employees on these jobs perform fundamentally the same kind of work, whether the project is in Albuquerque or Boise, it seems only proper that we negotiate contracts on an area-wide rather than a local basis. More thought should be given to this type of bargaining."

One of the steps already taken by the Division is a re-activated jurisdictional committee with the operating engineers. To date, the committee has worked out "definite policies and procedures," including "certain common" but unspecified problems. And the future looks good to Purvis, who notes that "the spirit of co-operation shown by all in attendance certainly gives hope that a lasting and permanent groundwork has been laid for amicable settlement of remaining disputes and those that may develop."

Arizona operating engineers okay agreement; long strike ends

Arizona's $500 million construction industry finally resumed operations after a 2-month shutdown resulting from a bargaining dispute between Operating Engineers Local 428 and a group of employer associations including the Arizona Associated General Contractors, the Arizona Building Contractors, and the Phoenix Association of Home Builders.

Also settled were new contracts be-



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tween the operating engineers, teamsters, and laborers and the Arizona Aggregate Association, which represents about 90 per cent of the state's sand, gravel, ready-mix, and asphalt plants.

Settlements were based on annual wage increases of 7½ per cent a year for three years for the engineers and 7 per cent over three years for the teamsters and laborers. Fringes includes 7½ cents for health and welfare and, in Local 428's agreement, one cent for apprenticeship training.

Wage rates for operating engineers under the new construction agreement range from $2.81 to $3.68½ for the first year. The new aggregate agreements set a range of $2.36 to $3.32 for engineers, $2.29 to $3.08½ for teamsters, and $2.24 to $3.05 for laborers.

Hiring and subsistence provisions of the engineers' construction agreement follow the Arizona Master Labor Agreement signed some weeks ago by the carpenters, cement masons, laborers, and teamsters. Employers will obtain men exclusively through nondiscriminatory halls operated by the unions, and subsistence pay ranges from $2 to $6 a day with 12 free zones.

Free zones are 30 miles around Phoenix and Tucson and 20 miles from the city halls in Casa Grande, Douglas, Flagstaff, Miami, Mesa, Kingman, Prescott, Safford, Holbrook and Yuma. Workmen get $2 a day on jobs within the first 15 miles beyond free zones, $4 a day on jobs 15 to 30 miles outside free zones, and $6 a day for work beyond 30 miles.

Nevada trades settle for 20-25 cents this year; get more fringe money

Wage increases of 20 to 22½ cents hourly and additional money for fringe programs were provided for in agreements wrapped up recently by the building trades in Nevada, according to the Federated Employers of Nevada, Inc.

Carpenters, however, want more than the area pattern, and at last report had rejected an employer offer of 22½ cents immediately in wages, a commitment to maintain health-welfare benefits up to a maximum additional contribution of 1½ cents an hour, and an increase of from $10 to $15 per contractor per year for apprenticeship training.

The union liked the 22½-cent wage increase, but it wanted the 1½ cents additional for health-welfare immediately; asked that the apprenticeship contribution be changed from an annual payment to one cent per man per hour; and looked for a pension program to begin January 1, 1960, with employer payments of 10 cents per man per hour.

The operating engineers settled for what they received in San Diego and Los Angeles—25 cents a year for three years, with a first-year wage increase of 20 cents an hour and an additional 5 cents for health and welfare making the total employer payment 15 cents an hour. Wages go up 20 cents more June 1, 1960, and again June 1, 1961, and pension fund contributions of 5 cents an hour begin June 1, 1960, and go to 10 cents an hour June 1, 1961.

California pile drivers set wage rates for next three years

The Associated General Contractors rewrote their contract with Northern and Central California pile drivers to provide for 63½ cents in hourly pay increases over the next three years.

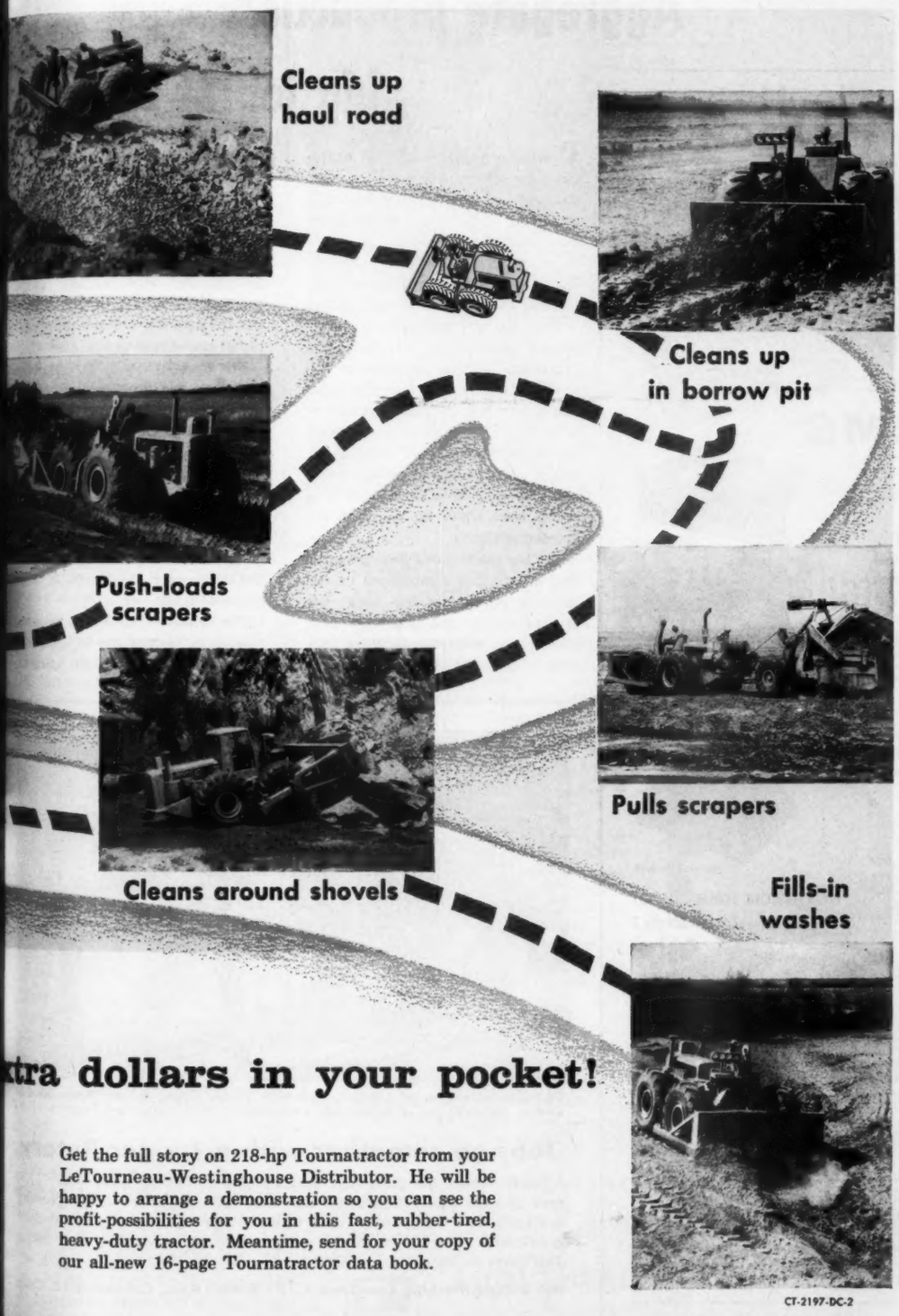
Pile drivers, in separate negotiations from the carpenters, accepted much the same settlement: a 22½-cent wage increase plus an additional 1-cent welfare payment retroactive to June 15, 17½ cents next June 1, and 22½ cents on June 1, 1961. Subsistence pay, where applicable, was increased from $3 to $4.50 a day.

Present hourly rate is $3.68, plus an 11-cent welfare contribution.

Nashville bricklayers, contractors in tenth month at bargaining table

Bricklayers' Local 4 and the Mason Contractors Association of Nashville were still hashing over the union's bid for a 25-cents-an-hour wage boost after ten months at the bargaining table.

The union wants 12½ cents immediately and the second 12½ cents in the second year of the agreement. An alternate proposal would channel part of the money into a health-welfare plan, a union official says. Under the old contract, which expired December 31, 1958, bricklayers are receiving $3.75 an hour. However, retroactivity is not an issue, the official adds.



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Several plants were kept in operation to produce the many sizes of aggregates needed for paving work at Glasgow Air Force Base, Glasgow, Mont. These were used in subbase, base, and concrete and bituminous pavements. This primary unit, a Cedarapids 4×10-foot screen, sends oversize to a 4-foot cone crusher. All this material goes to the intermediate surge pile.

Aggregate production: big job at air base

Producing a wide variety of aggregates for select subbase, base course, concrete and bituminous mixes, and other uses is one of the major problems in the $13 million contract for construction of runway, taxiways, aprons, and related facilities at Glasgow Air Force Base, Glasgow, Mont.

Although the aggregate source is located on or near the base, the gravel lies in a relatively shallow deposit overlaid by 6 to 8 feet of earth and 5 to 6 feet of sand that had to be stripped off and wasted. Because of the limited supply of water available in the area, a large settling basin and filtration area were needed to clarify wash water for re-use in the processing plant.

The big grading and paving operation was further complicated by the intricate phasing of the work; the existing fighter unit had to be kept in operation while new facilities were built to convert the setup to a Strategic Air Command heavy bomber base.

Peter Kiewit Sons' Co., Sheridan, Wyo., started work on the 3-year $13 million contract immediately after the award early last summer. By the time winter weather brought the work to a halt in late October, the contract was nearly a third completed and ahead of schedule.

The crew of nearly 900 workmen, which started work in early May, is maintaining two shifts throughout the season in an attempt to advance the project to a stage where SAC can begin operations early in 1960.

The grading and paving project is only one of a number of contracts currently under way at the base under the supervision of the Walla Walla District of the U. S. Army Corps of Engineers.

The Glasgow Air Force Base was started in 1955 as one of a series of fighter bases stretched out along the

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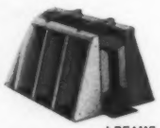
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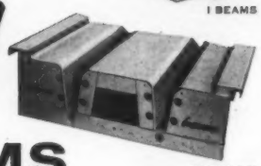
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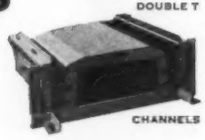
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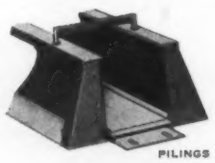
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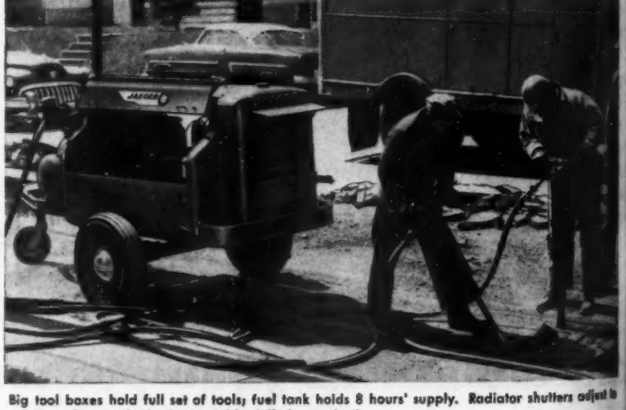

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northern boundary of the country. Before the facility was even completed, the SAC dispersal program developed it, and in 1958 construction began on the completely revised plans for the SAC base. This meant the remodeling of some facilities already built and the addition of many more.

In the first phase of the program, the existing 9,000-foot runway was left intact for Air Defense Command operations. The existing taxiway was strengthened with a 15-inch reinforced-concrete overlay and widened by the addition of 50-foot-wide shoulders on each side. Additional taxiway was built to extend the length to 13,000 feet, and cross taxiways were built halfway across the 1,500-foot median between runway and taxiway.

Also under Phase 1, 1,000 feet of new 300-foot-wide concrete runway was built at the extreme northwest end of the field, with 3,000 feet intervening between it and the existing runway. This phase was completed in 1958 so that the ADC could use the new taxiway as a runway for its operations during the succeeding phases.

Phase 2 work was carried on simultaneously with Phase 1, and consisted of an additional 1,975 feet of new runway, new heavy operational aprons, and hangar access aprons. Strict safety measures were in effect, as these operations were carried on while the ADC planes were using the original runway.

Work on Phase 3 started this spring when the planes began using the new taxiway as a runway. This phase includes the remaining 1,025 feet of new runway, widening of the existing runway from 150 to 300 feet, completion of taxiways, removal of the concrete end of the existing runway, and the construction of 1,500 feet of new concrete runway at the southeast end of the field. When this phase is completed sometime this year, operations can be switched back to the main runway while Phase 4 is under construction.

The fourth and final phase of the contract, which is scheduled for completion in the summer of 1960, is the building of a line of alert aprons, extending 4,000 feet up the valley from the southeast end of the new runway, together with nine hardstands for the parking of the big ships.

Aggregate production

Since the million cubic yards of select subbase and the several other types of aggregates were obviously critical items in the work, Kiewit went right to work in the gravel pit while scrapers were excavating for Phase 1.

The base is located in northeastern Montana, in a region of deep frost penetration with soils susceptible to loss of stability under frost action. The runway, taxiway, and apron sections are therefore designed with an over-all depth of 44 to 82 inches of combined paving, base, and frost-resistant subbase. The subbase is a minus 3-inch select

(*Continued on next page*)

This lineup produces material for hot-mix paving. Raw material is brought by a Pioneer 36-inch reciprocating feeder and conveyor to a 4×14-foot Cedarapids double-deck screen. Fines go to washers for processing into concrete sand. Oversize goes to cone and roll crushers and other screening units.

Cape Constructors' D 'Pull operator, Steve Yarema, says units are "fine for work on housing jobs. Electric controls are simple to operate and the machines are a cinch to maneuver."

LW earthmovers speed start of air base housing project

Construction of an urgently needed second 500-home military housing project at Dover Air Force Base, Del., was given a fast start by Hart Constructors of Dover. A joint venture made up of Terminal Construction Corporation of Wood-Ridge, New Jersey and Frouge Construction Co., Inc. of Bridgeport, Conn.—largest builders of military Capehart housing in the nation. The firm handled site preparation with five high-speed LeTourneau-Westinghouse earthmovers—four 29.5-mph D Tournapulls® and a 26-mph LW Adams* 660 motor grader.

On cycles about a mile long, the four 138-hp 'Pulls* averaged a total of 50 loads of gravel per hour. Material was spread as base for temporary construction buildings and parking lots. The 160-hp grader ranged the spread, cutting and maintaining haul and access roads and smoothing scraper-spread gravel on the fill in its spare time.

"Practically no lost time"

Administrator Jack Chasin reports that the dependability of the "660" and D 'Pulls was outstanding, and a real help in keeping the operation on schedule. "There was practically no lost time for repairs," he says, "and operating costs were low."

High-speed LW units can cut your costs, too. See the heavy-duty "660" grader and high-production D Tournapull at work. Ask for a demonstration.

"It's easy to keep ahead of scrapers on the fill with this grader," reports John Ratledge, operator of Cape Constructors' Adams 660. "It's got plenty of power, easy handling controls, and I have a good view of the blade all the time."

*Trademark GDP-2035-DCJ-1

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(Continued from preceding page)

Sand goes to this Eagle sand classifier and 36-inch×25-foot double dehydrating screw. The sand is stockpiled by stacking conveyor; the excess of certain sizes is wasted.

material containing a maximum of 3 per cent of particles finer than .02 mm. To meet these specifications, it was necessary to screen out oversize and some of the fines.

Caterpillar DW20 and DW21 scrapers, push-loaded by D9 tractors equipped with Peterson dozers and push-blocks, stripped off the overburden from a large area of the pit to expose the gravel. D8 tractors dozed this gravel to a trap feeding a Kolman 48-inch conveyor that carried a double-deck vibrating screen attached to its discharge end.

As the material passed over the screen, oversize was picked off on a 3-inch screen, and the remaining material was divided on the ¼-inch screen. These fine and coarse fractions were conveyed and trucked to separate stockpiles; they were recombined in a blending plant in a proportion that resulted in the wasting of about half the fines.

The recombined select material meeting the specifications was gathered in a bin where moisture was added before the material was discharged into waiting dump trucks. Water for the mix was trucked nearly five miles to this setup.

Concrete aggregates washed

The production of aggregates for the hot-mix and concrete started with a primary screening and crushing unit. Raw gravel was brought in from the remote areas of the widespread pit by the DW20 and DW21 scrapers, or by trucks and "Euclids" loaded by shovels or tractor shovels. A D8 fed the raw material to a Cedarapids 4×10-foot screen equipped with a Nordberg 4-foot cone crusher. The output of this unit was stored in a surge pile for further processing.

When concrete aggregates were being produced, material from the surge pile was dozed to a Pioneer reciprocating feeder and conveyed to a 4×14-foot Cedarapids screen. Sand was fed directly to an Eagle sand classifier and a 36-inch×25-foot double dehydrating screw. The finished sand was stockpiled by a Pioneer 120-foot stacking conveyor. After lying in the stockpile at least 72 hours, the sand was recovered on a Kolman 42-inch conveyor and brought to trucks that made deliveries to the batch plant.

Coarse aggregates went to an Eagle 25-foot twin-screw log washer, and then to a Cedarapids 4×14-foot double-deck screen with spraybar for final rinsing. The finished material was conveyed to two 45-ton surge bins from which the trucks were loaded.

Since water is not plentiful in this part of Montana, the contractor had to recover the wash water from the aggregate plant and clarify it for re-use. For this purpose, an 80-acre settling basin was diked off, and some 1½ miles of channels were dug to collect the water and return it to a pumping station.

Among the more difficult materials to produce were the two types of base rock. Specifications required 75 to 90 per cent fractured faces. A typical setup for producing one of these materials started with two D8's feeding a Kolman conveyor and screen, from which the minus 1¼-inch material was rejected. The retained rock then passed through a series of Cedarapids crushers, including a primary jaw, secondary jaw, short-head cone, and

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Besides the feature-packed 2-yard ML-157 with its 7,000-pound capacity, Lorain also offers a versatile 1¾-yard ML-153 with a 6,000-pound capacity. Either one will build your profits.

Smooth going on rough grades

LORAIN MOTO-LOADER MOVES 1100 YARDS A DAY

It's the tough jobs that prove a loader's worth. Take this 2-yard ML-157, owned by Fairfield Construction Company of Bridgeport, Connecticut. Working on a 7,000-yard excavation for a garage, this husky Lorain Moto-Loader moves in, gets a big payload and climbs smoothly up and over rugged terrain without bounce or chatter. Moto-Loader design puts the center of gravity lower, balances the weight distribution better.

"I like forward and reverse operation by foot pedals," reports John LaRosa, partner. Lorain's exclusive One-Foot Travel Control frees the operator's hands for steering and other operations, speeds up digging-dumping cycles for higher output.

Special arm design provides a dumping height that loads higher trucks and hoppers, and a forward reach that permits dumping further out for faster loading. It eliminates "scissor action" for safe operation.

Add such features as: torque converter, power shift transmission, planetary wheel drive, power booster steering, four-wheel hydraulic brakes, and you have a loader that will make any job more profitable.

Pivoting one foot between two adjacent pedals moves the Moto-Loader forward or backward, controls speed, frees both hands for other operations.

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two roll crushers. The gravel had a hardness coefficient of 18, and the machinery had to prove its mettle to break the material down.

Bituminous paving

One of the important elements of the Phase 1 work was the bituminous paving of the 50-foot-wide shoulders of the long taxiway and similar shoulders around some of the aprons. The contract called for the placement of 90,000 tons of bituminous-concrete mixes.

Bituminous concrete for the binder and surface courses was mixed in a Cedarapids G-60 plant with a 6,000-pound-batch pugmill. The two types of fine aggregate and one of coarse material were dozed to the cold elevator feeding the dryer. Dry materials were bucketed to the hot bins and weighed out into the mix. An interesting feature was the separate handling of minus 200 materials. These fines were collected from the dryer and stored in a heated, insulated silo. Augers carried the fines from the silo to separate scales. From here, the fines went directly to the pugmill. The binder mix contained rock of a maximum 1-inch size. The surface course had a maximum of ¾-inch. Both materials contained approximately 6 per cent asphalt cement.

Trucks delivered the hot-mix to two Cedarapids laydown machines. Gallon 3-wheel rollers made the first pass, moving in with their large rear wheels on the fresh mix. Additional rolling was done by 2 and 3-drum tandems and rubber-tire rollers. Although the areas paved with bituminous concrete were practically all shoulders that will carry little traffic, they were given far more than a normal amount of rolling so that they attained a very high density. The two paving machines were operated in adjacent lanes to provide a hot joint.

Quantities

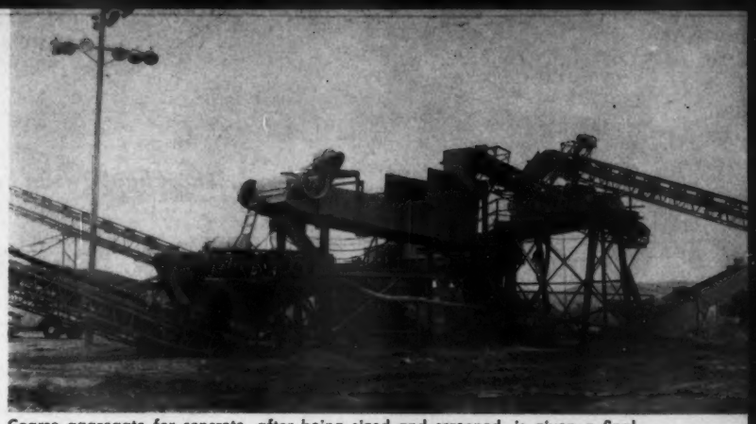
Some of the other major quantities in the big contract are: 2.9 million cubic yards of earthwork, 380,000 cubic yards of concrete paving, 4 million pounds of steel reinforcing and dowels, and 110,000 linear feet of 6-inch perforated underdrains. The contract included the installation of airfield lighting, a job that was sublet to Commonwealth Electric Co., Lincoln, Nebr. (See "Drill Excavates Bases for Taxiway Lighting," CE&E, June, 1959, page 86.)

Personnel

In charge of the big job for Peter Kiewit Sons' Co. is project manager Nick Evans. Other key personnel include area engineer Dick Millard, project engineer Frank Fennerty, office manager John Siebert, maintenance superintendent Don Armstrong, excavation superintendent Leo Larson, concrete superintendent Charles Valentine, asphalt superintendent Otto Shaeffer, and aggregate superintendents Charlie Powers and Bob Johnson.

The development of the Glasgow base was started with J. F. Skidmore serving as resident engineer for the Corps of Engineers. When he left to take over road and railroad relocations for John Day Dam, he was replaced by John Jacobson. The assistant resident engineer is Jack Butler. The military assistant is Capt. S. D. Starobin, the project paving engineer is Ray Hanks, and the office engineer is A. E. Jensen. Heading the material-control section is C. S. "Jim" Shay. Col. Paul H. Symbol is the Walla Walla District engineer.

The present resident engineer for the Corps at the Glasgow Air Force Base project is C. C. Davis, former resident engineer of the Ice Harbor Dam project, Pasco, Wash. THE END



Coarse aggregate for concrete, after being sized and screened, is given a final washing in this Eagle 25-foot twin-screw log washer, then sized and rinsed on the 4×14-foot Cedarapids screen equipped with spraybars. The material is then brought to surge bins to be loaded to trucks hauling to the concrete plant.

Top money-maker on big-volume jobs — that's the 360-hp B Tournapull with 28-yd Fullpak scraper. Weight tests taken throughout the country prove the "Big B" hauls more of its rated capacity than any other competitive scraper.

They're buying the BIG ones!

NOW, as never before, contractors are up-grading their earthmoving fleets with *big* high-speed self-propelled scrapers. And no wonder — with the demand for faster completion of highways — there are *more* big-yardage, *big-profit* jobs available.

And the LeTourneau-Westinghouse 360-hp B Tournapull® with 28-yd Fullpak® scraper is the machine that gives contractors more of everything they want . . . excellent production, dependability, maneuverability . . . ease of operation . . . and low-maintenance costs.

The Big B 'Pull* gives you all these money-making benefits because it has more high-speed dirtmoving features than any competitive unit. You get, for example, the world's fastest-loading scraper . . . the *Fullpak*. There's the LW *power-transfer differential* . . . which keeps your machine working in softest going. You get exclusive *electric controls* . . . fast-acting, easiest of all control systems to maintain. And you have a *choice of transmissions* — step gear or power shift — to match the machine to your type of work.

Visit your nearby LeTourneau-Westinghouse Distributor . . . let him give you detailed specifications on the LW "Big B". Tell him you'd like to see it in action. Call on him soon!

Another train load of B 'Pulls rolls out of the LW plant at Peoria, Ill. These 8 "B's" will put their owner — C. P. Minnaert, of Cuba City, Wisconsin — in a top competitive position on big-yardage work. The contractor who owns modern, high-production equipment is in position to complete more work on time, and make bigger profits.

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Clark Equipment news

■ Richard G. Fuller has been appointed district representative for the Michigan line of equipment produced by the Construction Machinery Division, Clark Equipment Co., Benton Harbor, Mich. He will serve Michigan dealers in Indiana, Illinois, and Iowa.

General Tire promotes

■ John L. Manley has been promoted to manager of truck-tire sales for the New York Division of The General Tire & Rubber Co., Akron, Ohio. A former Scranton, Pa., territory salesman, Manley succeeds Neil M. Andrew, who has taken over the management of Kings County General Tires in Brooklyn, N. Y.

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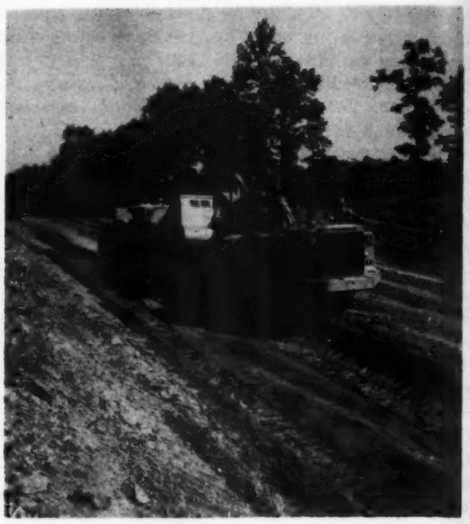
High production with small scraper fleet

In the largest single cut on the new Washington, D. C., circumferential highway, a Cat D8 push-loads a DW21. Only three scrapers and one pusher were needed to move more than 6,000 yards of excavation in a 10-hour day.



Well balanced cuts and fills, and the maintenance of an average haul length of 2,000 feet, made it possible for a contractor to move over 6,000 cubic yards of excavation per 10-hour workday with three scrapers and one pusher. Total borrow on the job came to about 8,000 yards.

The work, on a 2.41-mile section of the Washington, D. C., circumferential highway near Annandale, Va., provides two 24-foot roadways separated by a 60-foot depressed grassed median.

The $1,636,500 contract, which involved grading, drainage, service roads, and a cloverleaf interchange with State Route 236, was done by a joint venture—L. A. Reynolds Co., Inc., Winston-Salem, N. C., and Barnhill & Long, Inc., Tarboro, N. C.

The more than a million cubic yards of roadway excavation required by the contract was done with three DW21 scrapers, with one D8 serving as a pusher for the fleet. In all, the contractor had four Cat tractor-dozers on the project—two D8's, a

Hard to reach places are easy for...

the powerful *Viberette*

In prestress work in narrow forms

Hard-to-reach places and narrow stems of prestress T-sections are no longer a problem when the new Viberette Vibrator is on the job. It is designed especially for prestress and narrow form building construction.

The *12,000 rpm speed* and low amplitude of Viberette produces extremely effective vibration in consolidating low slump concrete.

A *small diameter* flexible drive with replaceable rubber tipped head makes it ideal for concrete compaction in constricted areas.

A *powerful*, universal ¾ HP electric motor gives Viberette plenty of "kick" for thorough vibration.

The 19 lb. Viberette Vibrator with new, dual grip, skid type handle makes the entire unit easy for one man to operate. A new shoulder strap attachment leaves both hands of operator free to manipulate the flexible drive.

Features

Interchangeable heads—1", 1-5/16" and 1-3/4" dia.
Flexible drive lengths—1' to 20'
Quick release drive connection
Replaceable rubber or steel tips

Contact your dealer or write direct for detailed information.
Viber Company, 726 South Flower Street
Burbank 28, California

VIBER CO **VIBRATORS**

Pioneers and leaders in the manufacture of vibrators.

For more facts, use Request Card at page 18 and circle No. 274

Need HOSE in a *HURRY?*

Suction • Water • Steam
Air • Multi-Purpose
Discharge • Pile Driver

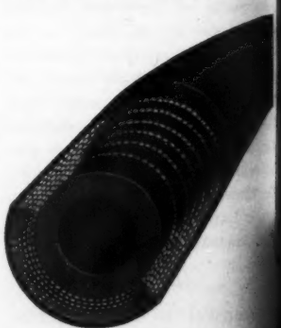
Wherever your job is—*whenever* you need hose—there's a Continental Warehouse nearby stocked to give you any kind of hose you want—*when* and *where* you want it.

There's no need to wait for distant shipments—no need to stop the job—no need to lose profits.

Any time you need hose call Continental. You'll like the fast service and dependable quality you get from these warehouses:

BALTIMORE, Md.	CLEVELAND, Ohio
BOSTON, Mass.	DETROIT, Mich.
CHICAGO, Ill.	MEMPHIS, Tenn.
	PHILADELPHIA, Pa.
	ST. LOUIS, Mo.

FIND US FAST IN THE YELLOW PAGES



CONTINENTAL STEAM HOSE

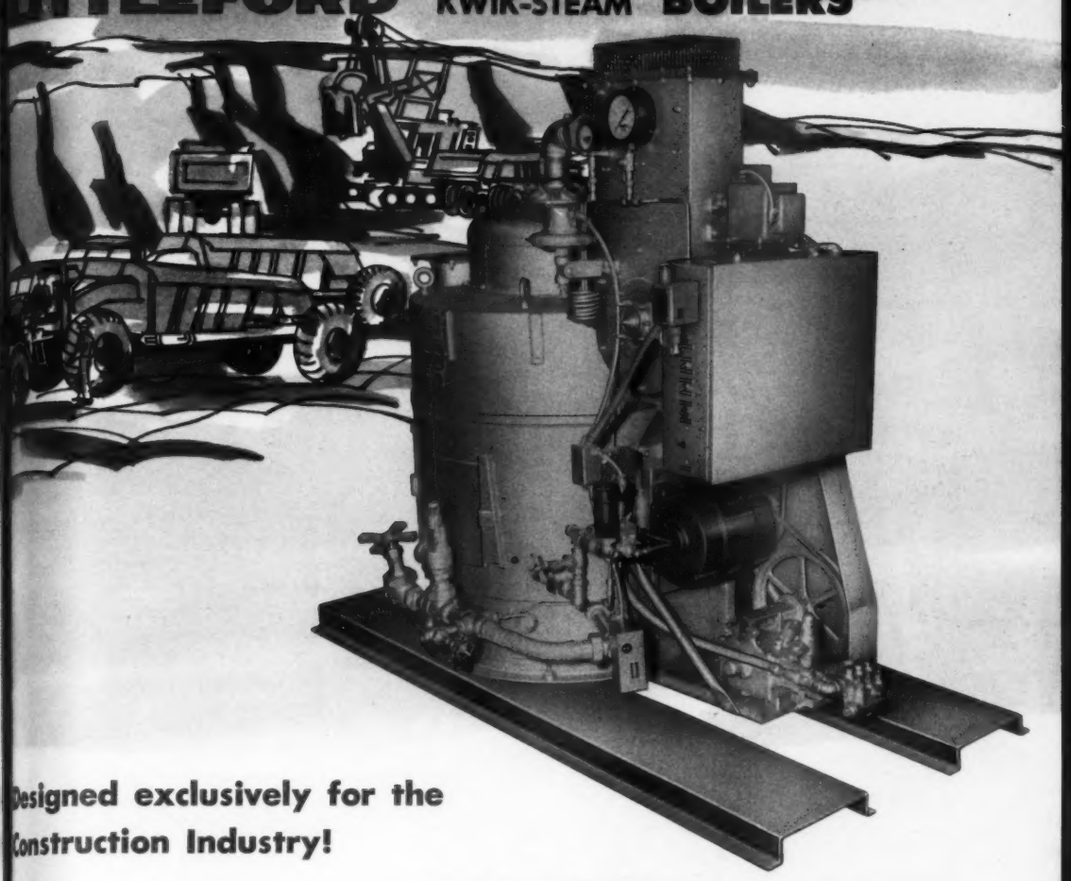
Built for work up to 100 p. s. i., this hose is tailor made with special heat-resistant rubber tube, plies of quality frictioned duck with heavy rubber separation and tough rubber cover. Sizes: ½", ¾", 1", 1¼", 1½", 2". Ask for catalog showing complete line of CONTRACTORS HOSE, HOSE FITTINGS, BOOTS and CLOTHING.

HOSE by CR **CONTINENTAL**

CONTINENTAL RUBBER WORKS • 1989 LIBERTY ST. • ERIE 6 • PENNSYLVANIA

For more facts, use Request Card at page 18 and circle No. 275

LITTLEFORD KWIK-STEAM BOILERS



Designed exclusively for the Construction Industry!

STEAM IN TWO MINUTES
from a cold start

COMPACT SIZE
light in weight

HIGH EFFICIENCY
78 to 82%

EVERY PART REPLACEABLE
capital investment only once

Littleford's "Kwik-Steam" Boilers produce full steam pressure in two minutes time . . . thus reducing both labor and operating costs by producing steam only when it is needed. Boiler is compact in size, light in weight, and easily located near its source of use. Six different sizes—20 to 150 BHP.

Find out for yourself how this Boiler can increase your production and at the same time reduce your overhead. For full information on how you can increase your profits with the use of a Littleford "Kwik-Steam" Boiler request Bulletin 22 on the postage paid air mail reply card at the bottom of this page.

LITTLEFORD BROS., INC. • 457 EAST PEARL STREET • CINCINNATI 2, OHIO

I should like additional information on how Littleford's "Kwik-Steam" will help me with the following:

- ☐ Ready-mix concrete operations
- ☐ Concrete products curing
- ☐ Pile driving

COMPANY_____

ADDRESS_____

CITY_____ ZONE____ STATE_____

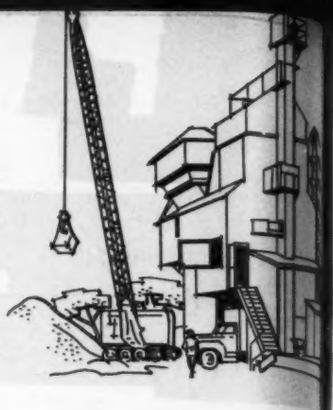
INDIVIDUAL_____ TITLE_____

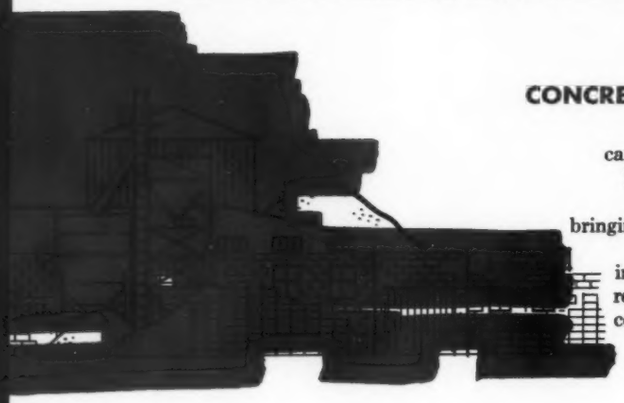
OFFICES IN CINCINNATI, OHIO AND ALBANY, NEW YORK

LITTLEFORD

BOILERS FOR READY-MIX CONCRETE

The Littleford Kwik-Steam Boiler permits operation of ready-mix plants the year round at a lower cost than ever before possible. With Littleford Kwik-Steam Boiler, fuel is consumed only when the Boiler is producing steam . . . does not require an operator on a 24 hour basis . . . there is no expensive installation. These are just a few of the many features that make the Littleford Kwik-Steam Boiler the most practical, economical and maintenance-free unit available for ready-mix concrete.





CONCRETE PRODUCTS CURING

Concrete block and prestressed concrete products can be increased by the use of the Littleford Kwik-Steam Boiler. With the Littleford Kwik-Steam Boiler you can produce a greater amount of moist heat in your kiln bringing the temperature up in a much shorter time, thereby cutting down on the amount of steam you require and increasing the output. Wetness of steam may be quickly regulated by increasing or decreasing the amount of fuel consumed and there is no expensive operation when unit is off . . . these are two big reasons the Littleford Kwik-Steam Boiler will mean greater profits for you.

PILE DRIVING

The Littleford Kwik-Steam Boiler is a compact, light weight, economical unit that produces high steam pressure quickly and can easily be moved on the job. This unit will produce full steam pressure in two minutes from a cold start thus doing away with the expensive operation of starting boilers hours in advance of actual work. Only the Littleford Kwik-Steam Boiler offers you instant steam when you need it.

For additional information on how the Littleford Kwik-Steam line of Boilers may help you increase production and profits simply return the attached air mail reply card on the other side of this page.

FIRST CLASS
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Cincinnati, Ohio

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457 EAST PEARL STREET
CINCINNATI 2, OHIO

LITTLEFO

WORLD'S
MOST COMPLETE
COMPLETELY
BLACK TOP EQUIPMENT

SEND AIRMAIL REPLY CA

REQUEST YOUR FREE LITERATURE

Compaction of a 6-inch lift of fill material is handled here by a LeTourneau-Westinghouse sheepsfoot roller pulled by an International 650 diesel tractor. A grid roller was also on the job for compaction work.

D7, and a D6. The second D8 was equipped with a ripper attachment that broke up some 60,000 yards of flint rock found in the largest cut. The soft material was then handled by the scrapers. The D6 spread the material in 6-inch layers for compaction. Other general assignments, such as structure excavation and backfilling, were handled by the D7 tractor.

Compaction equipment used included a LeTourneau-Westinghouse sheepsfoot roller, pulled by an International 650 diesel tractor, and a Hyster grid roller.

The main problem for the contractor was rain, and the extremely wet condition at the site. In the first five months of work, over 45 days were lost because of rain. Added to this was time lost because crews could not get back to work immediately after a rain. The high clay content of the soil kept the ground wet a day or so after rain stopped, and operations could not be resumed until the soil was dry. In view of this, the state gave the contractor a 32-day contract extension.

Structures

The elaborate interchange between the expressway and State Route 236 called for four cloverleafs and four on-and-off ramps. There are four bridge structures and one culvert in the interchange and a total of five reinforced-concrete culverts on the project.

This work was handled by the Sanford Construction Co., Sanford, N. C., under a subcontract. Sanford used a Lima crawler crane to handle the pile-driving, substructure, and superstructure work on the bridge, as well as culvert work.

Personnel

Melvin Vick Cockrell was the superintendent for the joint venture, and R. B. Edwards was the inspector for the Virginia Department of Highways.

THE END

B-E buys plans, patents for huge wheel excavator

■ Bucyrus-Erie Co., South Milwaukee, Wis., has acquired the plans and patents for the Kolbe wheel excavator.

The large earthmoving machine measures 46 feet wide, 150 feet high, and weighs 2,100 tons. It gets its name from the use of a 27-foot-diameter wheel with ten 2.5-cubic-yard buckets on it. Excavated material is discharged from the wheel to the belt over a roll feeder consisting of four steel rollers that rotate at speeds increasing from wheel to belt. The roll feeder allows buckets to dump at a lower position, permits using buckets of maximum width, and lets material cascade onto the belt without piling.

Koehring of California produces batch plants

■ Ruby portable batch plants and portable silos are now being exclusively manufactured by Koehring Co. of California, division of Koehring Co., Stockton, Calif.

Reo Division appoints

■ Charles L. Trombley has been appointed to the field sales coordinator group of the Reo Division, The White Motor Co., Lansing, Mich. He will serve in those areas calling for special factory representation, which includes sales promotion and penetration analysis, distributor assistance, and soliciting new sales outlets in Reo's distributor expansion program.

NEW PORTABLE PAVEMENT DRILL BY ACKER

SPEEDS HIGHWAY CORE TESTING

65 CORES A DAY WITH HIGH SPEED ACKER DIAMOND BIT

- Full 360° angle drilling
- Hydraulically operated leveling jacks
- Adjustable core barrel guide
- Integral pump and 100 gallon water tank

In routine operation, Acker's new highway test core drill using special Acker thin-wall diamond bits is producing 65 or more quality test cores per 8 hour shift.

Trailer mounted for portability, this new rig features a 100 gallon water tank and pump; a new built-in core barrel guide that saves time; hydraulic leveling jacks that simultaneously level the rig regardless of road contour; and dozens of valuable, exclusive features.

Write today for Bulletin 32 C&E.

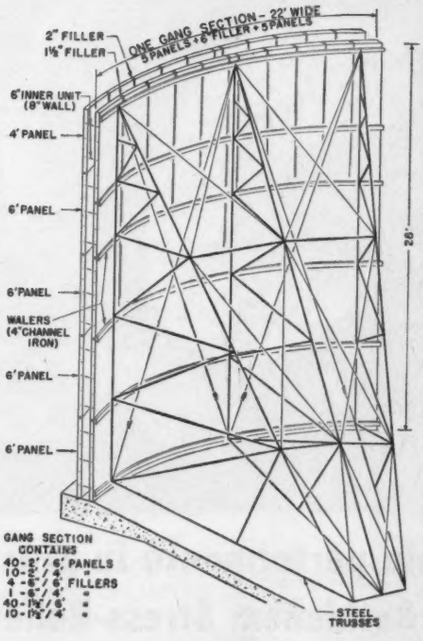
ACKER DRILL CO., Inc. P.O. BOX 830 SCRANTON 2, PA.

Over 40 years of experience manufacturing a complete line of diamond and shot core drills, accessories and equipment.

For more facts, use Request Card at page 18 and circle No. 277

New use for Symons Steel-Plys in gang forming...

28' CIRCULAR WALLS GANGED FOR SEWAGE PLANT



2,300 square feet of forms on inside ganged section stripped and reset by crane in 3½ hours.

8 men in less than 8 hours erected 2,300 square feet of forms and scaffolding on outside plus pouring the concrete.

Friebel & Hartman, Shelby, Ohio contractor ganged Symons Steel-Ply Forms on the Mansfield, Ohio Sewage Treatment Plant. The project consisted of four digestors, each 80 feet in diameter and 28 feet in height and 8 inches thick with no horizontal joints.

4 Ton Sections

Four ganged sections were used—each 22 feet wide and 28 feet high. This allowed pouring ⅓ of a tank at a time. Each ganged unit consisted of four rows of 6' Symons Forms and one row of 4' forms to make the 28' height. Three trusses were used to brace each ganged section. A ¾ yard Lorain with an 80' boom handled the sections.

One Pour Every 4 Working Days

What is the Friebel & Hartman verdict on using this method of pouring: "Ganged forming enabled us to place our concrete efficiently and vibrate properly, held bracing costs to a minimum, allowed us one pour every four working days and gave us some very low erection costs."

Complete story on the Ohio Sewage Treatment Plant will be sent FREE upon request. Symons Forms may be rented with purchase option.

Symons CLAMP & MFG. CO.

4251 DIVERSEY AVENUE DEPT. J-9 CHICAGO 39, ILLINOIS

Warehouses throughout the U.S.A.

MORE SAVINGS FROM SYMONS

For more facts, use Request Card at page 18 and circle No. 278

Big drilling fleet chews down rock cut

Rock cuts are handled in two lifts to the full 140-foot width during grading of Interstate 101 near Mt. Hope, N. J. Gardner-Denver Air Tracs, powered by Chicago Pneumatic compressors, sink the 3-inch blast holes with Rok-Bit carbide-insert drill bits. The contract calls for removal of 260,000 yards of rock.

High-production earth and rock moving spreads made a good showing on a 2.34-mile section of the new Interstate 101 between Mt. Hope and U. S. 46 in New Jersey.

Union Building & Construction Corp., Passaic, N. J., brought in a fleet of eight Gardner-Denver Air Tracs powered by seven Chicago Pneumatic 600-cfm compressors to sink the 3-inch blast holes for the removal of over 260,000 cubic yards of rock. Using Rok-Bit Series 60 carbide-insert X-bits, the contractor handled most rock cuts in two lifts across the entire roadway width. The deepest rock cut, for example, was 60 feet; it was blasted in two lifts using a 7×7-foot drill pattern and Hercules 40 and 60 per cent dynamite.

According to specifications, the loading of dynamite and blasting was limited to 50 pounds per delay used. During work on the deep rock cut, a maximum of 16 millisecond delays was used for a single blast.

Excavation of the blasted rock was handled with a Lima 1601 shovel equipped with an Amsco 4-yard bucket, which loaded a fleet of eight Euclid rear-dumps, plus three Mercury pulled by Cat DW21 tractors. An additional pair of Lima shovels—a 1601 with a 4-yard bucket and 1201 with a 3-yard bucket—was used to handle the 798,000 cubic yards of roadway earth excavation and the 200,000 yards of borrow.

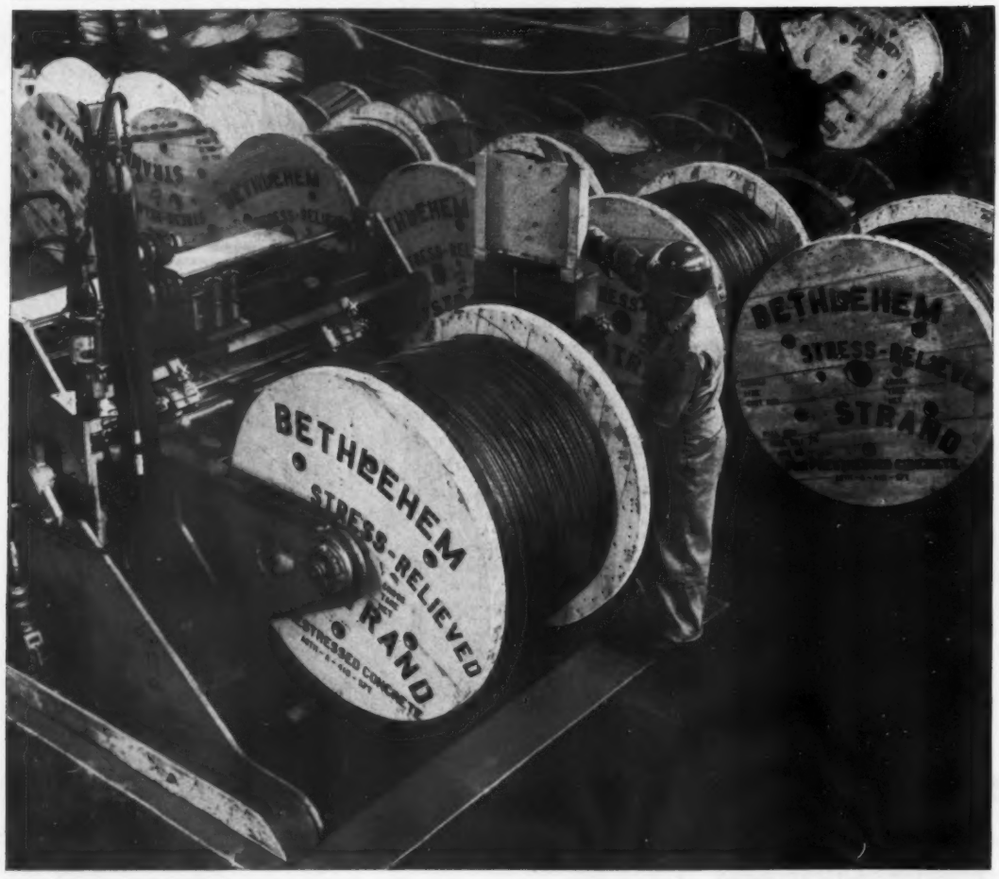
The borrow was obtained from two pits located along the right-of-way. Ten Euclid 24-yard bottom-dumps were used for off-the-road hauling and ten Mack 10-yard dump trucks for the long, over-the-road haul. With three shovels operating, Union Building moved an average of 8,000 cubic yards of rock and earth excavation per 10-hour workday.

Tractors assist

The shovel and haul spreads were assisted by ten Allis-Chalmers HD-15's and HD-20's and three Caterpillar D8 tractor-dozers. These were used around the shovel locations to spread rock and earth fills, to dress slopes and to do work required during the early clearing phases.

Earth fills, spread in 8-inch lifts, were compacted by two Bros 50-ton pneumatic rollers and a wobble-wheel roller.

Weather caused the job its toughest



For reliable performance in prestressed concrete use Bethlehem Stress-Relieved Strand

- *Meets ASTM A416*
- *Uniform mechanical properties*
- *Clean surface for tight bond*

Bethlehem stress-relieved strand delivers top performance in prestressed concrete because its manufacture and heat treatment are precisely controlled. The result is a strand which amply meets the exacting requirements of ASTM specification A416-57T.

Bethlehem's continuous, in-line operation maintains stress-relieving temperature within an extremely small range, providing a strand having constant and predictable mechanical properties—both within the same reel, and from reel to reel.

With Bethlehem stress-relieved strand there is no need for frequent cleaning of end diaphragms and strand grips due to clogging by foreign metal. Thus "down-time" is minimized.

The 7-wire strand, made in continuous lengths, has good flexibility and is easy to handle. And Bethlehem strand saves time on the job because crossovers during unreeling are held to a minimum.

Feel free to talk over your requirements with a Bethlehem engineer. To start the ball rolling, get in touch with the nearest Bethlehem sales office.

BETHLEHEM STEEL COMPANY
BETHLEHEM, PA.
Export Distributor: Bethlehem Steel Export Corporation

BETHLEHEM STEEL

For more facts, use Request Card at page 18 and circle No. 279

A Euclid 24-yard bottom-dump is loaded with roadway excavation by a Lima 1201 with Amsco 3½-yard bucket at another location. The contractor moved an average of 9,000 yards of material in a 10-hour day.

Earth excavation is handled by a truck-shovel fleet. This Lima 1601 with 4-yard dump bucket loads a Movall-Caterpillar DW21 haul unit as a Euclid rear-dump waits its turn.

problems. At one time, work on seven structures was slowed down. During this time, Union concentrated on the drilling and blasting of rock along the right-of-way, structure foundations, and drainage-pipe excavation and installation. This latter work was handled by a Lima 1-yard backhoe, which excavated for about 30,000 linear feet of drainage pipe, including underdrains.

The completed highway consists of two 37-foot asphaltic-concrete roadways, each having 13-foot inside lanes and two 12-foot outside lanes. A 42-foot depressed grassed median separates the roadways, which have 12-foot outside shoulders of penetrated macadam.

Personnel

Frank J. Novak was the project manager; William D. Kirk, the project engineer; Charles Worischeck, the bridge engineer; Lindsay Jarrell, the road superintendent; Russell King, the rock superintendent; and Frank Fuss, the bridge superintendent for Union Building. Charles Van Antwerpen was the resident engineer for the New Jersey State Highway Department. THE END

Waco builds new plant for two divisions

A 48,000-square-foot plant for Waco Mfg. Co., Cleveland, is scheduled for late summer completion in suburban Schiller Park near Chicago's O'Hare Airport. Located at 9555–9557 Irving Park Road, the plant will accommodate production and engineering facilities of two of the company's divisions. The Form Division, producer of prefabricated concrete forms, will move into expanded quarters from smaller facilities at the same location. The Porter Division, now located in Ottawa, Ill., will move its entire facilities to the new plant.

Curtiss-Wright division names sales manager

■ John P. Sheehan has been named New England district sales manager for the South Bend Division, Curtiss-Wright Corp., South Bend, Ind. The division manufactures self-propelled and tractor-drawn scrapers, and rear-dumps.

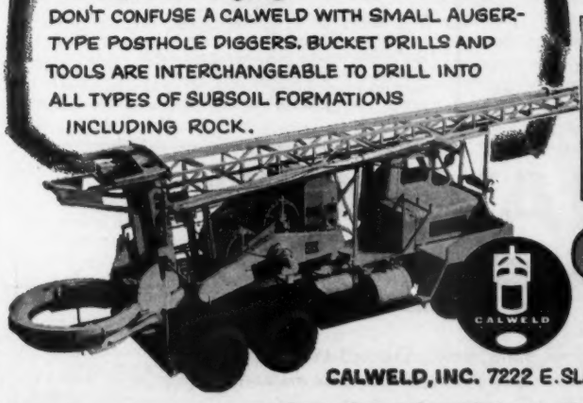
CALWELD DIGS A HOLE BIG ENOUGH TO BURY 3 TANK-TRAILER RIGS!

A CALWELD BORES A HOLE AS BIG AS 10' IN DIAMETER AND 200' DEEP! DIGS 45' DEEP IN ONE HOUR .....

BUCKET-DRILL HANDLES 1.4 YARDS PER PASS.

Hundreds of Contractors ARE USING CALWELD EARTH DRILLS FOR GENERAL EXCAVATING AND FOUNDATION PREPARATION — FOR BORING AND BELLING CAISSONS TO EXACT SIZE ... FOR DIGGING MANHOLES, CESSPOOLS ... FOR DRILLING WATER WELLS, SERVICE HOLES FOR OIL WELLS, SUBSOIL EXPLORATION AND TESTING.

THE CALWELD IS BIG AND DOES A BIG JOB. DON'T CONFUSE A CALWELD WITH SMALL AUGER-TYPE POSTHOLE DIGGERS. BUCKET DRILLS AND TOOLS ARE INTERCHANGEABLE TO DRILL INTO ALL TYPES OF SUBSOIL FORMATIONS INCLUDING ROCK.



WRITE FOR NEW "METHODS MANUAL FOR GENERAL CONTRACTORS & EXCAVATORS." A 16-PAGE BOOKLET FILLED WITH JOB FACTS AND METHODS USED IN ALL TYPES OF CONSTRUCTION JOBS.

CALWELD DRILLS

CALWELD, INC. 7222 E. SLAUSON AVE., LOS ANGELES 22, CALIFORNIA

For more facts, use Request Card at page 18 and circle No. 280

Distributor doings

ARRANGEMENTS FOR PROCURING PARTS AND EQUIPMENT for the Philippine Islands' road-construction program are being handled by Rosalio Jambolos, left, equipment engineer, and Conrado Gomez, chief of the Equipment and Shop Division, both of the Department of Public Works. They are with R. G. Burke, manager of the Machinery Department of Atkins-Kroll Co., Ltd., of San Francisco, the Viber dealer in the Philippine area.

RCA appoints seven new representatives

Manufacturer's representatives of mobile radio equipment produced by the Radio Corp. of America, Camden, N. J., have been appointed in seven areas. New representatives include Spiteri's Electronics, Erie, Pa.; Communications Service, Evansville, Ind.; Frosch Theatre Supply, Inc., Minneapolis, Minn.; Communications Sales, Inc., Youngstown, Ohio; Electronic Specialty Co., Charleston, W. Va.

Two additional representatives, Delta Communications, Inc., New Orleans, and Klaus Radio & Electric Co., Peoria, Ill., will handle sales in the southern part of Louisiana and Mississippi, and in central Illinois, respectively.

Trojan Division names four distributors

Four new distributors have been appointed by the Trojan Division of The Yale & Towne Mfg. Co., Boonton, N. Y., to carry its line of Trojan tractor shovels. G. C. Phillips Tractor Co., Inc., 4419 First Ave. N., Birmingham, Ala., will cover that state and all counties west of the Apalachicola River in Florida. This dealer also has a branch at 849 Telegraph Road, Mobile.

Malette Construction Equipment Co., 700 Seymour St., Sault Ste. Marie, Mich., will serve the entire Upper Peninsula of Michigan. George C. Gilbert, Inc., Lincoln Highway, Kingston, N. J., will cover the north central part of that state. The Dimond-Colton Equipment Co., of 4257 N. 124th St., Milwaukee, and 2010 E. Johnson St., Madison, will handle the entire state of Wisconsin. All dealers will carry a full inventory of parts.

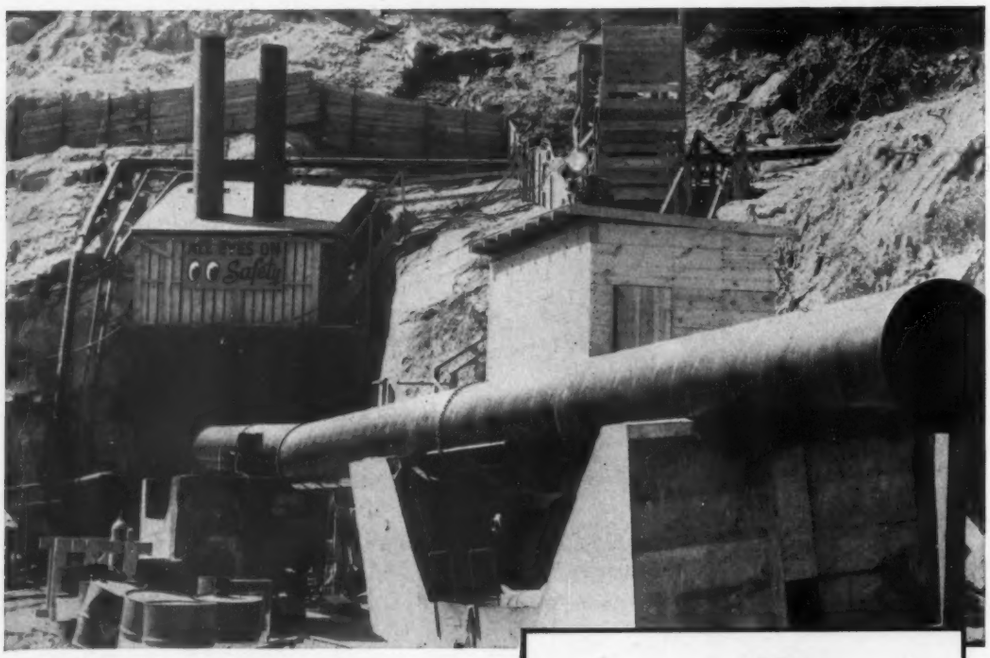
C. S. Johnson dealer named for southern area

Carey Equipment Co., 3439 Lamar Ave., Memphis, Tenn., has been appointed a distributor by C. S. Johnson Co., division of Koehring Co., Champaign, Ill. The dealer will cover western Tennessee, northern Mississippi, and northwestern Arkansas. Carey Equipment will carry all products in the Johnson line of concrete batching and cement-handling equipment.

Buffalo-Springfield news

A northern New Jersey distributor has been named by Buffalo-Springfield Co., division of Koehring Co., Springfield, Ohio. Fenwick Machinery, Inc., U. S. 46, Caldwell, N. J., will handle the complete Buffalo-Springfield line of compaction equipment: 2 and 3-axle tandems, 3-wheel rollers, pneumatic rollers, segmented rolls, vibratory compaction equipment, and the K-45 Kompactor.

PIPING SAFETY Into Tunnels

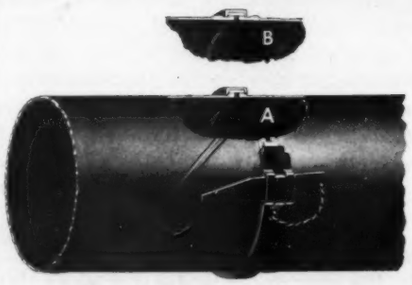


Speaking of safety, you can't go far underground without dependable pipe lines to bring in fresh air and exhaust smoke, gases and fumes.

NAYLOR Spiralweld pipe and Wedgelock couplings provide the ideal combination for ventilating lines in tunnel operations. The pipe is light in weight and easy to handle and install. The spiral-lockseam construction builds in the extra strength needed for push-pull service. And the NAYLOR Wedgelock coupling insures faster installation because connections can be made with only one side of the pipe in the open.

Whether you need pipe for handling ventilation, water or dredging service, it will pay you to consider the advantages of this NAYLOR combination.

Write for Bulletin No. 59



The NAYLOR LOW-PRESSURE WEDGELOCK coupling provides a fast, positive connection. Ideal for ventilating service because it saves space and permits the line to hug the wall. NAYLOR pipe is furnished with (A) accurately-sized shoulder ends or (B) with grooved ends for this advanced-type coupling.

NAYLOR PIPE Company

1270 East 92nd Street, Chicago 19, Illinois

Eastern U. S. and Foreign Sales Office: 60 East 42nd Street, New York 17, N. Y.

For more facts, use Request Card at page 18 and circle No. 281

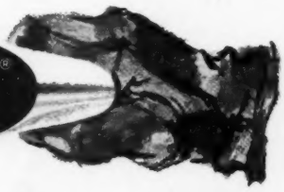
Ask the man who runs the rig...

no one makes a tougher tooth than ESCO

The right design, the right steel, the right shape make *ESCO* Points and Adapters right for every digging condition.

The construction industry looks to

ESCO®



Electric Steel Foundry Co., PORTLAND, OREGON

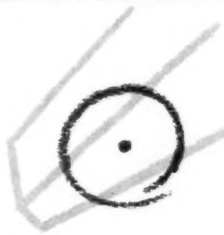
See reverse for shapes and size range

Here are the points to remember..

12M ALLOY STEEL

ESCO 12M Points are the toughest you can buy. Developed through years of research for the construction industry, cast *ESCO* 12M is carefully heat treated to produce the finest steel made for the severe shock and abrasion encountered by points and adapters.

RIGID QUALITY CONTROL TESTS ASSURE TOUGHNESS, HARDNESS



Every *ESCO* Point is Brinell tested to assure the exact degree of shock-absorbing toughness and abrasion-resisting hardness for longer digging life. Be sure to look for the Brinell mark on every *ESCO* Point you buy.

8 POINT SHAPES

You can select from eight different shapes to find the point that matches your digging conditions. *ESCO* Points are designed by bucket and excavation specialists who know how to achieve top digging performance. The self sharpening design of an *ESCO* Point makes it start sharp and stay sharp.

ESCO Points and Adapters for all digging equipment

Your local ESCO dealer can supply Points and Adapters for all your digging needs. By using ESCO Points and Adapters on all your equipment you can cut costs further by reducing your point inventory and consolidating purchases. Call your ESCO dealer today for details. He is listed in the yellow pages of your telephone directory. Or, write direct.

ESCO Point shapes ... start sharp, stay sharp and last longer under any digging condition.

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Electric Steel Foundry Company

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MFG. PLANTS AT PORTLAND, ORE. AND DANVILLE, ILL.
Offices in Most Principal Cities
ESCO INTERNATIONAL, NEW YORK, N. Y. • IN CANADA

distributor doings

Pacific Mercury names

Contractors Equipment & Supply Co., 1426 Ulster St., Denver, has been appointed a stocking distributor for electric plants and Solo concrete vibrators produced by Pacific Mercury Mfg. Corp., Van Nuys, Calif. The dealer will also maintain a complete parts and service department for PM customers.

Highway Trailer assigns

The Utility Sales Division of Highway Trailer Co., New York City, has appointed Eastern Earth Boring & Equipment Co., 251 Kidder St., Wilkes Barre, Pa., a distributor. The dealer will cover the entire state, eastern and western New York, Maryland, and Washington, D. C.

L-W adds distributor

The Robbins Machine & Mfg. Co., on State Route 75, Oneonta, Ala., has been appointed a distributor of the complete line of earthmoving, grading, and heavy hauling equipment produced by LeTourneau-Westinghouse Co., Peoria, Ill. Northern Alabama is this dealer's territory for L-W.

Clark Equipment names

Central Machinery Co., 4008 Treadway St., Abilene, Texas, has been appointed a distributor by the Construction Machinery Division, Clark Equipment Co., Benton Harbor, Mich. The dealer will handle the complete line of Michigan equipment in 37 Texas counties.

South Bend Division news

Dale & Rankin, Inc., Hanover, N. J., has been appointed a distributor of the complete line of construction machinery made by the South Bend Division, Curtiss-Wright Corp., South Bend, Ind. The dealer will cover northern New Jersey and southeastern New York.

Worthington assigns

Contractor's Equipment Rental Co., 111 Merrill Ave., Reno, Nev., has been named to carry the Blue Brute portable rotary compressors, air tools, and contractors' self-priming pumps manufactured by Worthington Corp., Harrison, N. J. The dealer will cover the entire state of Nevada.

Phillips and subsidiary expand facilities

The Victor L. Phillips Co. and its subsidiary, Safway Rental & Sales Co., have moved to new and larger quarters at 4100 Gardner, Kansas City, Mo. The new facilities include a 12,000-square-foot warehouse for parts and equipment storage and a shop for the service and maintenance of construction machinery. Overhead trolleys, steam-cleaning and sand-blasting facilities, a painting room, and other modern maintenance equipment will be added to the new shop.

For more facts, circle No. 283→

"Euc" service schools held in Florida

Three service training schools, lasting two days each, were recently attended by 90 mechanics, operators, supervisors, and owners of equipment produced by Euclid Division, General Motors Corp., Cleveland. The courses, held in Miami, Orlando, and Jacksonville, Fla., were sponsored by the Square Deal Machinery Co., Orlando.

A factory instructor from Euclid's service department covered such subjects as preventive maintenance, trouble shooting, and rebuilding of the major components used on overhung engine scraper models in the Euclid line.

Memphis Equipment names

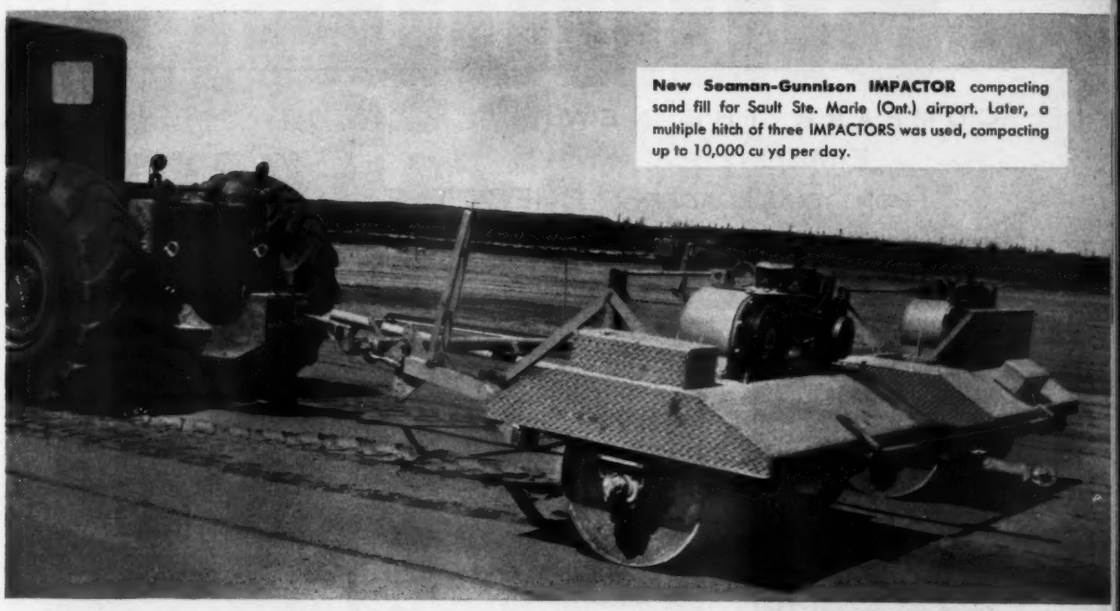
Milton Y. Toombs, Jr., has been named vice president of Memphis Equipment Co., Memphis, Tenn. A member of the company for the past eight years, Toombs was most recently its sales manager.

Parker Seal appoints

Nielsen Hydraulic Equipment, Inc., 1429 E. Elizabeth Ave., Linden, N. J., has been appointed a distributor for Parker Seal Co., Culver City, Calif. The dealer will carry Parker O-rings.

Southern Equipment news

Curtiss L. Brown has joined the sales staff of Southern Equipment & Tractor Co., Shreveport, La. He will be a representative for Caddo Parish.



New Seaman-Gunnison IMPACTOR compacting sand fill for Sault Ste. Marie (Ont.) airport. Later, a multiple hitch of three IMPACTORS was used, compacting up to 10,000 cu yd per day.

Michaud & Simard, Inc.,

Smash Compaction Bottleneck on sand fill

...with new Seaman-Gunnison IMPACTORS!

Deep sand fill, with specifications calling for 98% of standard Proctor, presented a difficult compaction problem for Michaud & Simard, Inc., on their Sault Ste. Marie (Ont.) airport contract. Over 1,000,000 cu yd of sand fill plus 240,000 tons of gravel and stone base for asphalt paving, made high volume compaction a necessity.

The sand fill compaction problem was solved with the new Seaman-Gunnison IMPACTOR. Using three 72-inch units with a multiple hitch the required density was obtained at a rate of *up to 10,000 cu yd per day!* Only one to three passes (depending on fill depth) were required.

Similar high productivity was obtained on the gravel and stone base with a 6-19-ton Seaman-Gunnison DUO-PACTOR, lightly ballasted to prevent material placement. Material was placed in 3-inch layers, then compacted to the required 100% of modified Proctor, *in a single pass!* Working at five miles per hour with the combined action of steel and rubber rolls, the DUO-PACTOR will compact up to 5,000 cu yd per day.

★ ★ ★

The exceptional efficiency of the IMPACTOR results from a *vertically* directed impact which alternates tamping action with the complete release of surface tension, each cycle. This action enables the IMPACTOR to obtain high densities at greater depths, and to compact a wide range of soil types as well as granular materials.

The IMPACTOR differs from conventional vibrators in that the impact forces are directed vertically only, are counterbalanced, and operate with a greater amplitude to provide a heavier tamping force.

In the IMPACTOR, only the tamping roll moves. Engine and platform are completely sprung, consequently are non-vibrating. Drawbar surge also is eliminated. This design, plus location of the impactor unit above the tamping roll for complete accessibility, greatly reduces maintenance.

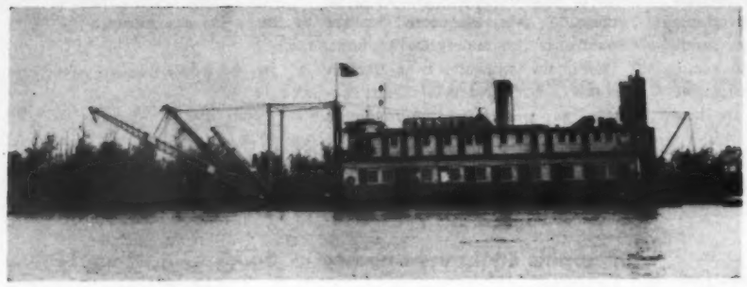
★ ★ ★

If a compaction bottleneck is slowing down your job and cutting into profits, *phone us today!* A qualified Seaman-Gunnison representative will gladly help you work out procedures for lowest-cost, high-speed compaction with Duo-Pactor, Impactor, or TRI-PACTOR (Duo-Pactor plus impact vibratory). You'll sharply reduce *both* investment and operating cost!

Model 6-19 TR (trailing roll) DUO-PACTOR was used for compacting both sand fill and gravel-stone base. Note how the steel roll presses in ridges between tire tracks to produce uniform density across the entire rolling width.

SEAMAN GUNNISON

Seaman-Gunnison Corp.
Milwaukee 15, Wis., Tel.: ORchard 1-0114
• Duo-Pactors • Street Flushers
• Tri-Pactor • Utility Scraper
• Impactor • Bituminous Distributors



A deep-water outlet that will provide a tidewater channel from New Orleans to the Gulf of Mexico is being cut through timbered swampland that is about a foot above sea level. The 20-inch hydraulic dredge Tchefuncta, built by Jahncke Service, Inc., is working across the channel to get into position for a 250-foot-wide cut.

Big dredges dig channel to the Gulf

Project will give New Orleans a 76-mile short cut to the sea

Powerful dredges and mud-soaked men are cutting their way through the muck in a Louisiana swampland to help make one of New Orleans' biggest dreams a reality. The men and equipment are working on a 76-mile tidewater channel that will connect the city with the Gulf.

Already, they have dredged out some 20 million cubic yards of muck completing the first five miles of the channel. The dredges are now moving into a third contract that will take them seven miles closer to the sea.

Better approach to city

For more than 100 years, the shipping interests of New Orleans have been campaigning for a second deep-water outlet to the Gulf of Mexico. At present, cargo ships approaching New Orleans from the Gulf must fight their way against the current of the Mississippi River along a winding 120-mile course. With the greatly increased tonnage handled by the Port of New Orleans in recent years, dock facilities have become inadequate and handling of cargo is slow.

The tidewater channel, which was authorized by Congress in 1956, will eliminate the growing bottleneck. The channel will give ships a shorter, easier approach to New Orleans, as well as provide room for new dock facilities. It is estimated that the channel will save shipping interests about $7 million a year, which will more than pay for the annual charges for the project.

The construction of the channel, which is expected to cost $96 million, is under the supervision of the U. S. Army Corps of Engineers. The Board of Commissioners of the Port of New Orleans has been designated as the assuring agency to represent local interests and to provide the right-of-ways.

Construction starts

Although some preliminary work was started on the channel in December, 1957, the dredging did not get into full swing until the spring of 1958. Jahncke Service, Inc., New Orleans, was awarded the first major contract, for $1.6 million, which called for the excavation of 9.5 million cubic yards of material to complete a 13,000-foot length of channel at its beginning in New Orleans. It

(*Continued on page 46*)

COMPARE THE NEW EIMCO 123 FRONT END LOADER! CHECK THE **FACTS** NOT THE CLAIMS

	EIMCO 103	CAT D-6	CAT D-6	AC HD-6	AC HD-11	INT. TD-9	INT. TD-15	CASE 1000
Maximum Drawbar Pull, Pounds (zero track slippage)	33,600	10,700	19,000	15,485	21,980	13,240	23,730	24,000
Torque Converter	Yes	No	No	No	No	No	No	Yes
Master Clutch	No	Yes	Yes	Yes	Yes	Yes	Yes	No
Power shift transmission on all speeds, with oil-cooled metallic clutches that never need adjustment	Yes	No	No	No	No	No	No	No
Independently reversible track	Yes	No	No	No	No	No	No	Yes
Hydraulic track take-up	Yes	No	No	No	No	No	No	Yes
Heat-treated alloy steel grouser shoes, keyed to the track links	Yes	No	No	No	No	No	No	No
One-piece heat-treated alloy steel track rollers, tapered roller bearings	Yes	No	No	No	No	No	No	No
Equalizer bar of heavy duty heat-treated cast alloy steel, allowing full oscillation of crawler tracks with all attachments	Yes	No	No	No	No	No	No	No
Constantly running power take-off drives, front and rear, to standard SAE specs, with rear take-off not affected by track operation, and independent hydraulic pump drive allowing simultaneous use of hydraulic, winch and hoist accessories	Yes	No	No	No	No	No	No	No
Front operator's seat for full visibility	Yes	No	No	No	No	No	No	No
Ability to operate forward and backward on up to 90% slopes	Yes	No	No	No	No	No	No	No
Tractor guaranteed for one full year of single shift service	Yes	No	No	No	No	No	No	No

FOR PROOF OF EIMCO 123 SUPERIORITY

FRONT END LOADERS	EIMCO 123	CAT 955	CAT 977	AC HD6G	AC HD11G	INT. 9K3	INT. 15K3	CASE 1000
WEIGHT, POUNDS	25,000	23,470	34,915	19,600	32,000	19,985	33,235	21,800
ROCK BUCKET, CU. YARDS	1¾	1.1	1.8	1½	2¾	1½	2¾	N.A.
ENGINE HP	100	70	100	72	111	71	115	100
TRACK GAUGE, INCHES	60	60	74	60	74	60	74	60
SHOE WIDTH, INCHES	17	15	18	13	16	15	18	16
LENGTH OF TRACK, INCHES	88	91½	105⅞	83½	104½	75	98½	79
TRACK AREA, SQ. INCHES	3,000	2,450	3,814	2,180	3,410	2,250	3,546	2,530
GROUND PRESSURE, PSI	8.3	9.2	9.2	9.0	9.4	8.9	9.4	8.6
LIFT HEIGHT TO HINGE PIN, INCHES	144	128	144	120	139	125	144	134
DUMP HEIGHT, INCHES	115	100	114	96	114	102	113	101
DUMP REACH, INCHES	44	38½	39	31	37	36	37	40
MAX. DUMP ANGLE, DEGREES	63	50	50	45	52	60	58	50
MAX. PUMP PRESSURE, PSI	1,200	1,450	1,400	1,000	1,300	1,800	1,750	1,450
PUMP, GPM	75	43	52.5	39	72	N.A.	N.A.	50
LIFT TIME, SEC.	7.5	7.0	9.1	9.0	9.0	7.7	9.0	7.5
DUMP TIME, SEC.	3.0	4.0	5.0	4.0	4.0	N.A.	N.A.	1.6
GROUND CLEARANCE, INCHES	17	13⅝	19¼	11¾	13¾	9	10	16

N.A. — not available

Information is from manufacturer's data and other sources believed to be reliable, but cannot be guaranteed.

IT'S A FACT . . . not a claim . . . that here is a MODERN line of tractors that makes all other crawler-tractors old-fashioned!

Other exclusive features includes Unitized "Stress Flow" Construction, for far greater strength and rigidity; Self-cleaning Air Cleaner that completely eliminates ordinary routine cleaner maintenance and others, far too numerous to list here. Write for details and specifications on all the advanced engineering features of the modern Eimco 103 line of crawler tractors.

AVAILABLE IN FOLLOWING MODELS:
103 — TRACTOR AND DOZER
123 — FRONT END LOADER
133 — STEEL MILL FEL
143 — LOG LOADER

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TRACTOR LOADER DIVISION
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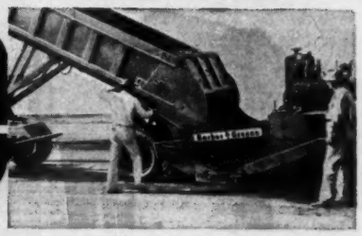
SALT LAKE CITY, UTAH — U.S.A.

For more facts, use Request Card at page 18 and circle No. 284

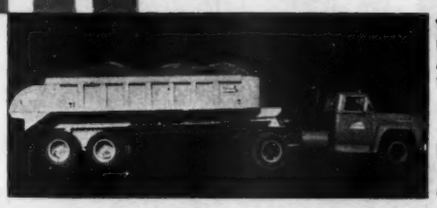
SINGLE DUMP TRAILER

leads double life



feeds asphalt spreader Extra height of mountings lines up dump bed with spreader hopper. Asphalt dump aprons prevent spillage from tail gate.

asphalt type trailers, available in single axle or tandem models, are versatile in application—economical in operation.



hauls sand, gravel, dirt or dry batch Has all dumping controls. The asphalt trailer will do anything a regular dump trailer will do.

Dunham trailers are made in a wide variety of models, bottom dump as well as end dump, to meet the legal requirements of any state. Ask us for all the facts and "Let a DUNHAM carry your load."

Dunham

dunham trailers

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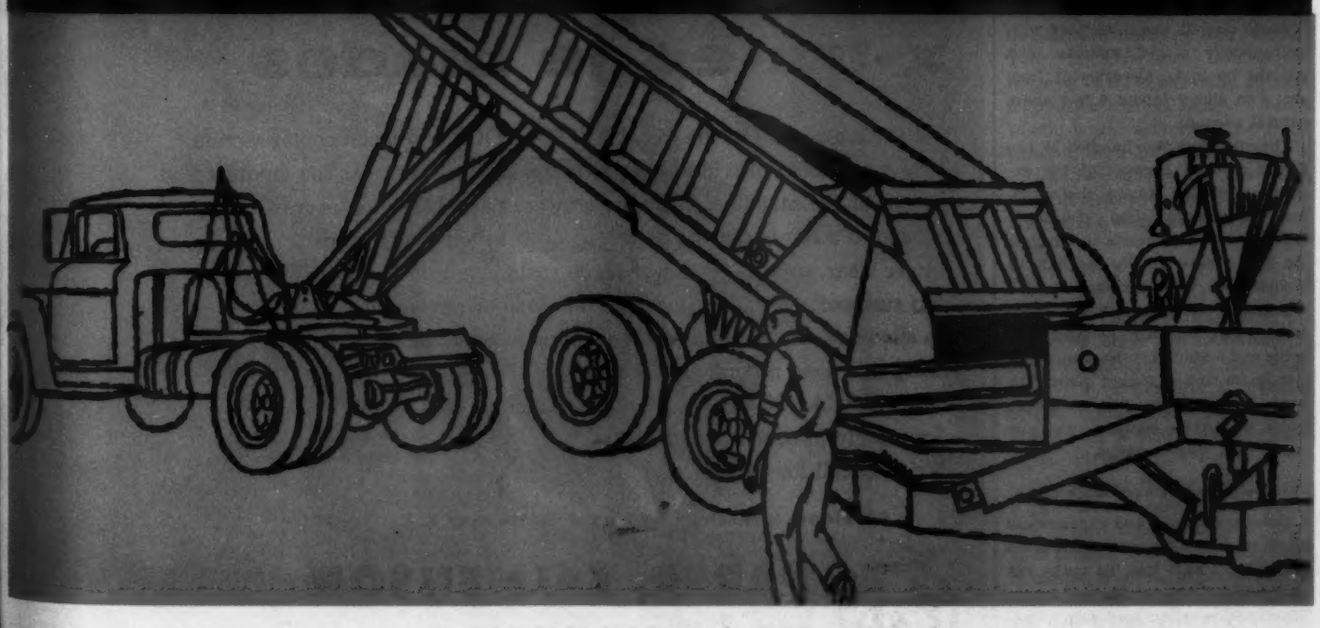
Ask about our retail Finance plan.



The 24-inch Paul F. Jahncke cuts out the remaining width of the channel, part of which is in the Intracoastal Waterway, on the far side of the dredge. Discharge from the floating line goes over a 7-foot retaining dike and heads out across the spoil.

(*Continued from page 44*)

June, Jahncke also snagged the second contract—a $1.6 million job to move 10.2 million cubic yards on an adjoining stretch.

The 500-foot-wide, 36-foot-deep channel begins at the intersection of the Inner Harbor Navigation Canal and the Gulf Intracoastal Waterway, about 2 miles north of the Mississippi River. The channel follows the general course of the Intracoastal Waterway in an easterly direction for 5.5 miles. It then swings southeast through marshlands to its outlet in the Gulf of Mexico. The last 26 miles of the channel is in open water.

The present work is at the beginning of the channel, alongside of and including the Intracoastal Waterway. Practically all of the cut runs through timbered swampland that is only about one foot above sea level.

Dike work comes first

Before the main channel could be dredged, a levee base had to be mucked out and a retaining dike built along the south side of the waterway. The 6-foot-high dike, which ran about 200 feet south of the channel, served to contain the hydraulically placed spoil. The trenchlike levee base, which ran about 325 feet south of the channel edge, gave the protective levee a firm base in the mucky soil. The 55-foot-wide trench was excavated from 12 to 18 feet deep—down to clay. It was later filled with hydraulically placed material and brought up to an elevation of from plus 6 to plus 9 (about 6 feet above natural ground).

The dike work was handled by two dipper dredges. Because of the excessive roots and stumps, the barge-mounted cranes used clamshells rather than drag buckets to excavate the boggy material. For the difficult dredging job, the contractor used an American crane with a 120-foot boom and a 5-yard clam. On the other spud barge was a Marion crane with a 100-foot boom and a 5-yard clam. The levee base, which was excavated under a separate contract, was also dug with a dipper dredge.

Hydraulic dredges have tough going

The roots, stumps, and underground debris made the dredging of the main channel a rough job. To make the work less difficult, the 20-inch dredge Tchefuncta was equipped with a special impeller. The 76-inch impeller was built with only two large veins so that roots and debris had free passage. All the dredges were equipped with cutterheads.

The silt and fat clay material, which made up most of the excavation, also was a problem. The almost liquid material hardly supported the discharge line, let alone the men working on it. To keep from sinking waist-deep in the mud, the men worked on mats made of branches and timber. The mats also helped to support the pipe.

The first dredge to dip its snout into the tangle of roots and mud was the Tchefuncta. The 20-inch dredge, built by Jahncke in 1930, is armed with an Amsco 5×6 cutterhead made of manganese steel. Its wooden hull draws 9 feet of water and supports a 2-story superstructure. A De La Vergne 1,250-hp diesel drives the main pump.

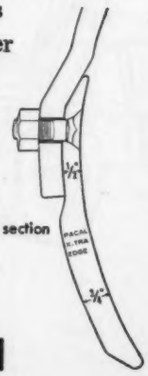
The anchors for the swing lines on the dredge are conveniently positioned by two 70-foot booms that stem out from either side of the ladder. Maneuvering of the dredge is also assisted by the two 33-inch-diameter rear spuds.

Later in the season, the dredges Manchac and Paul F. Jahncke arrived on the muddy field of battle. The Paul F. Jahncke is the latest addition to

PACAL

x-tra-edge blades

See the extra steel in the Pacal X-TRA-EDGE hardened center section. This new design provides extra working steel right under the greatest weight of the machine. It resists crowning and blade metal waste is kept to a minimum. Users tell us of as much as six times longer wear, up to 40% lower blade costs . . . used in winter and summer; on maintaining gravel roads or pavement, on shoulder maintaining, on snow and ice removal, on oiling and road mixing or blacktopping. It pays to use PACAL X-TRA-EDGE BLADES.
Accurately punched for all makes.
Write or call for details.



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with ⅝" top

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CIRCULAR 881

the contractor's fleet. Built in 1957, the 24-inch hydraulic dredge was designed by Ellicott Machine Corp., Baltimore, and built by the contractor.

The 3-deck all-steel dredge is powered by a Cooper-Bessemer 3,700-hp diesel. It can dig to depths as great as 85 feet. The comfortable quarters for the men are completely air-conditioned in summer and have central heating in the winter.

Besides making the men comfortable, the new dredge also gets the job done. Even working through the roots and mud, the dredge was able to put out from 40,000 to 50,000 cubic yards of material per 24-hour day.

Another 24-inch suction dredge, the John H. Shary, also assisted in the difficult work. The dredge is owned by Bauer Smith Dredging Co., Port Lavaca, Texas, which was working under a subcontract.

Two of Jahncke's dredges normally worked together to cut out the 500-foot-wide channel. One of the dredges cut out a portion of the channel width, while the other followed to remove the remaining half. The dredges took out the material to an elevation of minus 45 to make sure the bottom would clear minus 40, the allowable overdepth. Actually, the contract depth is minus 36, or about 36 feet below the water level.

The 20-inch line of the Tchefuncta has to be laid on branches and timber to keep it from sinking into the extremely soft clay. Crews are adding another length to a Y-section of the discharge line. The joints are held together with turnbuckles; handles at the ends of each section make it easy to carry.

County Highway Official, Missouri—"Pacal ½" to ¾" x 8" special hardened blades giving about 5 times more wear than ½" x 6" blades."

County Highway Official, Minnesota—"380 hours on machine before blades were worn out."

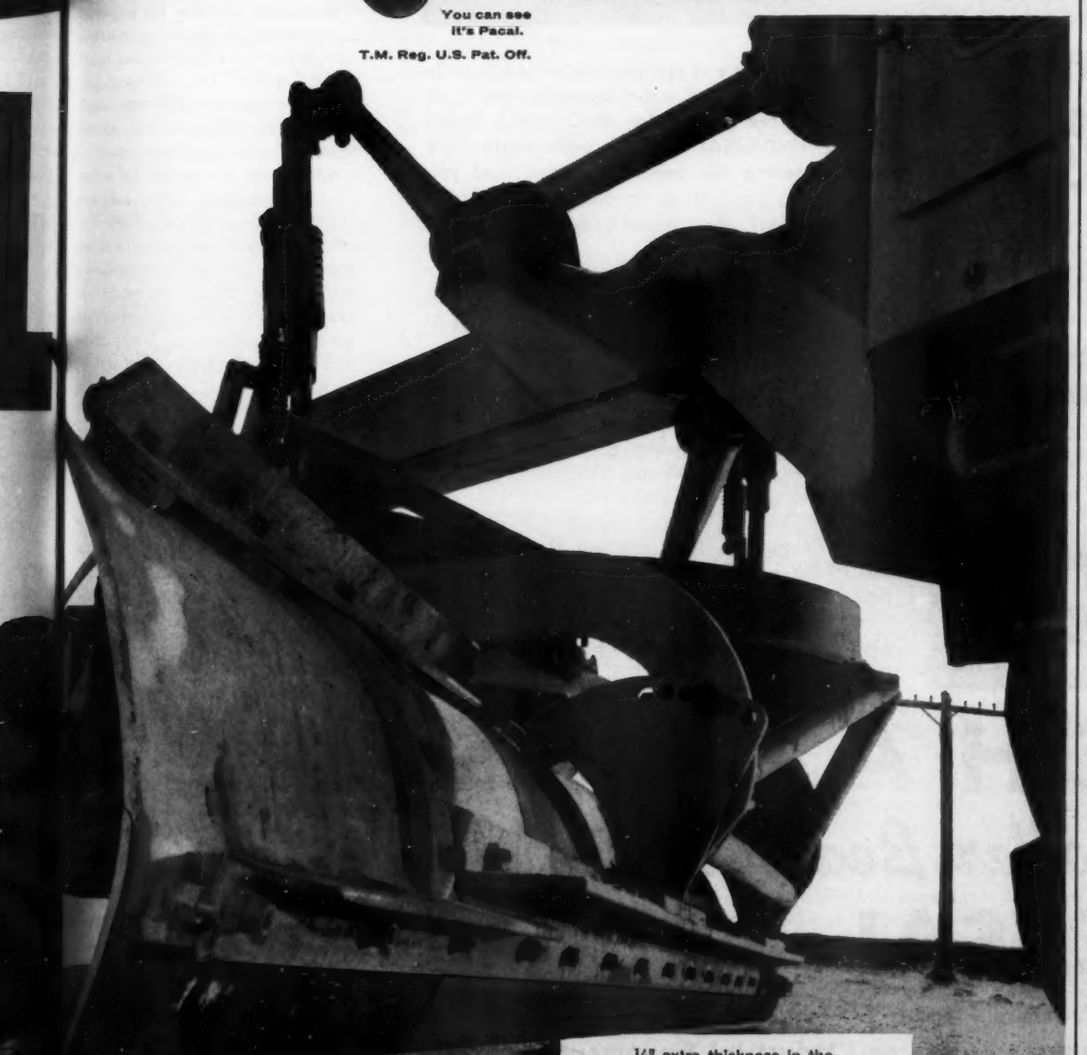
County Highway Official, Iowa—"After one year's use new Pacal blades have saved our county 40 to 50% in blades and bolt costs."

County Highway Engineer, Iowa—"Special hardened blades very satisfactory here. Switching to this three-piece arrangement 100%."

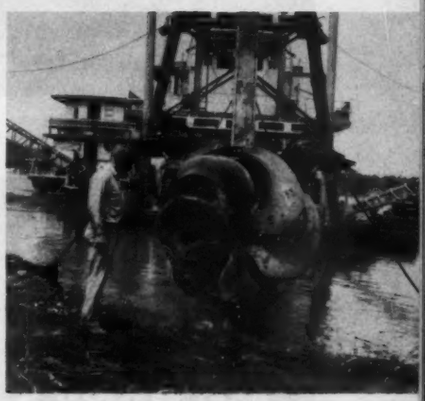
ATTENTION, X-TRA-EDGE OWNERS—Pacal Plow Bolts are heat-treated for triple strength and hardness. They will not loosen or stretch and heads will not wear off. Especially developed to provide the longer wear required by your Pacal X-TRA-EDGE BLADES.

You can see it's Pacal.

T.M. Reg. U.S. Pat. Off.



¼" extra thickness in the wearing part of the center section



The captain of the Tchefuncta, A. W. Johnson, inspects the Amsco 5×6 cutterhead of manganese steel. Note the swing lines on both sides of the cutterhead. They go from the winch on the bow down the back of the ladder and then over to the anchors.

All the discharge is pumped through the floating and land lines to the spoil bank and levee on the south side of the channel. The soft, slimy soil makes it difficult for crews to handle the pipe on the land line. The pipe is handled by rolling the sections out on the in-place discharge line.

Third contract under way

The first two contracts were completed earlier this year; the third contract, currently under way, is held by Standard Dredging Corp. of New York City. The work involves the dredging of a 140-foot-wide, 20-foot-deep access channel along a 7.2-mile length of the waterway. The access channel, which will later become a part of the main 500-foot-wide channel, will serve as a means of getting dredges and equipment into the work area.

Personnel

For the Corps of Engineers, the project is under the supervision of Fernando Estopinal, Jr., area engineer. J. S. Fortenberry is assistant project engineer, and Raymond D. Womer, Jr, is supervisory inspector for the Corps.

For Jahncke Service, Joe H. Moss is in charge of dredging operations. The project superintendent is Capt. O. C. Daussin. The dredge Tchefuncta is captained by A. W. Johnson; the Paul F. Jahncke, by J. Boudreaux; the John H. Shary, by F. O. Porche; and the Manchac, by Roland Landry.

THE END

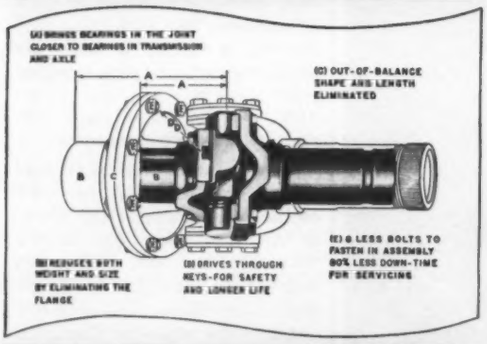
←For more facts, circle No. 286

TOUGH CALICHE is tossed up by a Barber-Greene Model 774 ditcher cutting a trench for a Capehart housing project at Fort Hood, Texas. Three trenches —for sewer, water, and gas lines—35 to 60 feet long and up to 7 feet deep are required for each of 500 dwellings. Mitchell Darby Construction Co., McAllen, Texas, is the contractor.

$$\frac{\text{MECHANICS}}{\text{LESS PARTS}} = \frac{\text{LESS}}{\text{ASSEMBLY TIME}} + \frac{\text{LESS}}{\text{WEIGHT}}$$

$$\frac{\text{MECHANICS}}{\text{LESS WEIGHT}} = \frac{\text{MORE}}{\text{PAYLOAD}} \times \frac{\text{HAULS MADE}}{\text{BY TRUCK}}$$

You Are PAYING For MECHANICS JOINTS


(a) BRINGS BEARINGS IN THE JOINT CLOSER TO BEARINGS IN TRANSMISSION AND AXLE
(c) OUT-OF-BALANCE SHAPE AND LENGTH ELIMINATED
(b) REDUCES BOTH WEIGHT AND SIZE BY ELIMINATING THE FLANGE
(d) DRIVES THROUGH KEYS—FOR SAFETY AND LONGER LIFE
(e) 6 LESS BOLTS TO FASTEN IN ASSEMBLY 80% LESS DOWN-TIME FOR SERVICING

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For Cars • Trucks • Tractors • Farm Implements • Road Machinery • Aircraft • Tanks • Busses and Industrial Equipment

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Prefabricated road patented in 1918

To the Editor
CONTRACTORS AND ENGINEERS
Dear Sir:

The July, 1959, issue of CONTRACTORS AND ENGINEERS contains an article on page 54 titled, "And Now a Prefabricated Road," in which it is said "a new kind of road . . . is the brain child of Walter Schorch . . . of . . . Germany."

This idea is really not new. I would like to call your attention to an application filed with the United States Patent Office on October 23, 1916, by inventors Dwight S. Cole and Herbert B. Gillette, of Grand Rapids, Mich., for Road Construction, for which Patent No. 1,254,401 was issued January 22, 1918.

The patent provides for individual precast-concrete supporting members with lateral and longitudinal interlocking devices, and individual precast floor slabs or units with ledges and inserts to provide for positive interlocking against displacement.

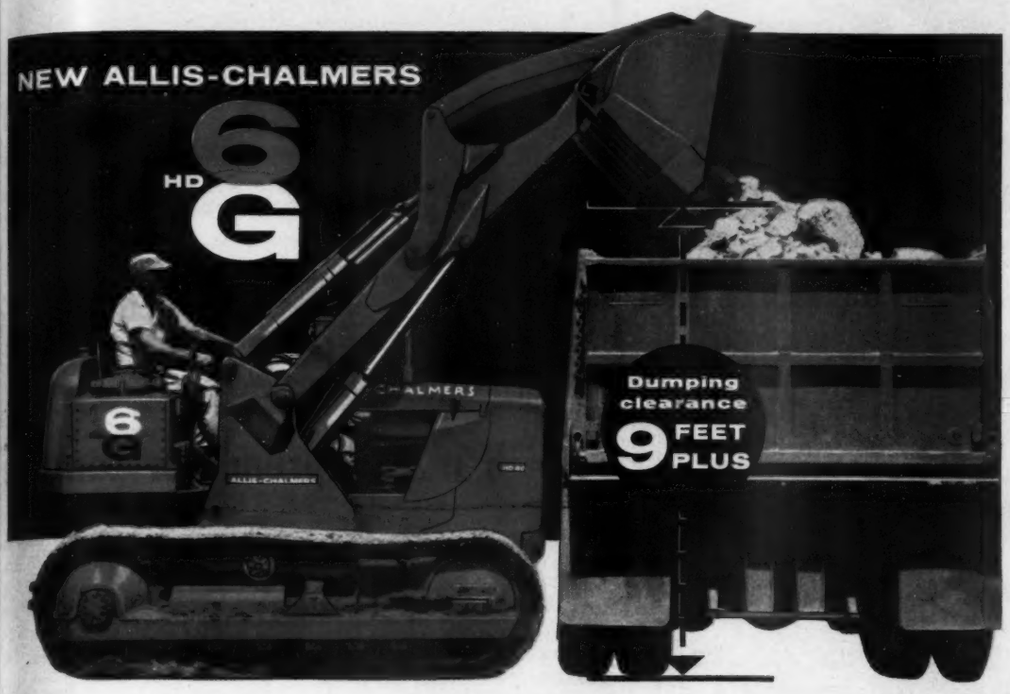
Advantages claimed in the article for Mr. Schorch's idea read very much like those for the scheme patented 41 years ago, which includes statements such as "the construction is made up of elements or units that can be formed and finished by factory methods at plants for the purpose and then readily transported and assembled and joined together to form an efficient structure for traffic purposes . . . a suitable filling, as coal tar, asphalt, or other bituminous material to make the joints waterproof and provide for expansion and contraction between members . . . the floor of our road is carried, free from bottom contact with the earth beneath on suitable concrete footings embedded in the earth below harmful action of frost . . . rolling and surface preparations of earthwork are dispensed with . . . roads can be laid at any season of the year . . . it is unnecessary to interrupt traffic while the new road is being built . . . it does not require expensive machinery . . . the standard interchangeable molds can be made at any central point and conveyed by truck to the place where they are to be laid."

This is just another example that helps to prove the old adage, "There is nothing new under the sun."

Sincerely yours,
Warren D. Fish, Chief
Construction Administration Branch
Bureau of Public Roads
Washington 25, D. C.

new slant in tractor shovels . . .
everything you need for

BIG PRODUCTION AT LOW COST



- 72 net engine hp 21,000 lb
- 1½-yd general purpose bucket
- 40° bucket tip-back
- Fast reverse to 4.1 mph
- Rugged "in-line" booms and linkage

Height with a bonus in reach

With as much as a foot more dumping height than the maximum for ordinary tractor shovels, the 6G reaches 'way out to dump over the center of big, sideboarded, 12-yd trucks. This height-and-reach combination pays off on other jobs,, too—like stockpiling or loading out of excavations.

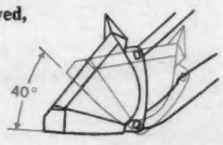
What you want most in a 1½-yd tractor shovel is here. The new 6G gives you advanced-design features that mean extra productive ability you can *measure*—plus new comfort and convenience for the operator, servicing simplicity and big-tractor strength.

But this is only half the story. Your Allis-Chalmers dealer can tell you much, much more—and *prove* it, too! Why not let him set up a demonstration *now*, on your tractor shovel job? Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.

Super pry-out action

The new 6G's curved-bottom bucket puts a 10¼-ton force at the cutting edge. This unique "rolling-leverage" action is far more effective than the fixed, toe-and-heel principle of an ordinary, shoe-type bucket bottom. You can break out stubborn boulders, stumps and old pavement easily—get *full* loads *fast* in hardest materials.

Bucket tips back 40° on curved, box-section bottom.



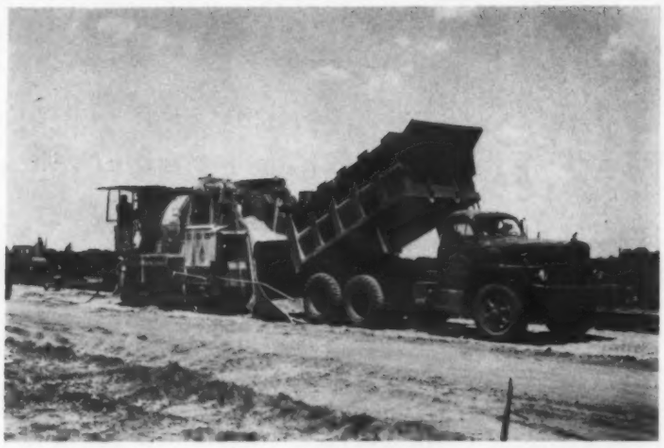
"In-line" strength

Booms and linkage are twin towers of solid-steel strength, straddle-mounted on wide-spaced pivots in the double-walled side frames. Lift and dump cylinders operate in exactly the same line, put dependable hydraulic power to work *straight from the shoulder.*

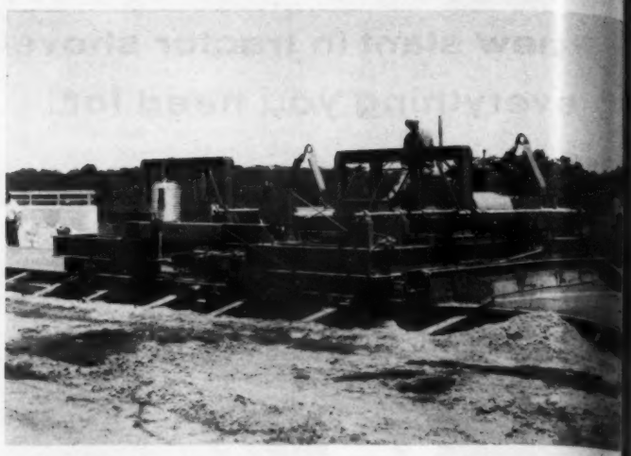
Speed with stability and control

Shift from any forward speed to either reverse speed with a single lever—choose the *right* speed for every tractor shovel function. Powerful hydraulics put big loads right to the top, then bring the bucket down in a smooth, swift cycle. Nearly seven feet of track on the ground . . . positive, accurate controls . . . and new "down-slope" visibility let you handle the bucket and tractor with unheard-of balance and precision.

move ahead with ALLIS-CHALMERS . . . power for a growing world



With bituminous paving sublet, the contractor on the North-South Freeway in New Jersey concentrates on concrete paving. A Koehring paver is being fed by a Mack batch truck with 5-batch capacity.



The Heltzel Flex-Plane rig, with two transverse screeds and a transverse plate riding over the surface of the slab, requires only one operator and eliminates the need for a longitudinal floating machine.

multiply manpower WITH watson cmetco POWER BUGGIES

WATSON-CMETCO Power Buggies at work on Peter Kiewit Carquinez (Calif.) Bridge approach job.

YOU'LL PLACE MORE CONCRETE FASTER, AT LOWER COST, with job-proved CMETCO Power Buggies on the job. Here's why:

* UNEQUALLED MANEUVERABILITY—51" turning radius, easy automotive-type steering and controls, and instant reversing make CMETCO Buggies fast and easy to handle even on narrow ramps and tight, tricky platforms.
* PLENTY OF POWER to handle full loads on steep ramps. Load is centered over dual drive wheels for extra traction.
* EXTRA CAPACITY—10½ cu. ft. struck, 13½ heaped.
* FAST, CLEAN, CONTROLLED DUMPING—bucket is nicely balanced for easy, accurate dumping control and is designed for clean self-purging dumping that eliminates hand scrape-outs.
* NO OPERATOR TRAINING REQUIRED—Anyone can handle CMETCO's simple automotive type steering and controls!

YOU'LL BE HOURS AND DOLLARS AHEAD with WATSON-CMETCO Power Buggies on your job. Why not get the facts now? Write today for complete information and name of your local WATSON-CMETCO distributor; please address Dept. T9

watson cmetco BETTER EQUIPMENT FOR PLACING AND FINISHING CONCRETE...

12

Dealer Inquiries Invited

H. S. WATSON COMPANY
1316-67th STREET • EMERYVILLE, CALIFORNIA
TOLEDO, OHIO

Power Buggies • Telescoping and Economy Vibratory Screeds • Rota Pavers and Trench Boxes • Wood and Steel Tilt-Up Hardware • Bull Floats • Hoppers • Elephant Trunks and Chutes • Tampers • Hand Carts

For more facts, use Request Card at page 18 and circle No. 289

Contractor speeds freeway project by subbing asphaltic work and using . . .

Mechanized spread for concrete

By subbing asphaltic-concrete paving and using fast-working equipment on the concrete-paving work, a contractor saved plenty of time on the paving of the North-South Freeway, which is known as N. J. 42.

Franklin Contracting Co., Little Falls, N. J., was the contractor on this $1,621,623, 4.17-mile-long paving project, which forms a high-speed link between N. J. 42 and the new Walt Whitman Bridge that connects Gloucester City, N. J., and Philadelphia, Pa.

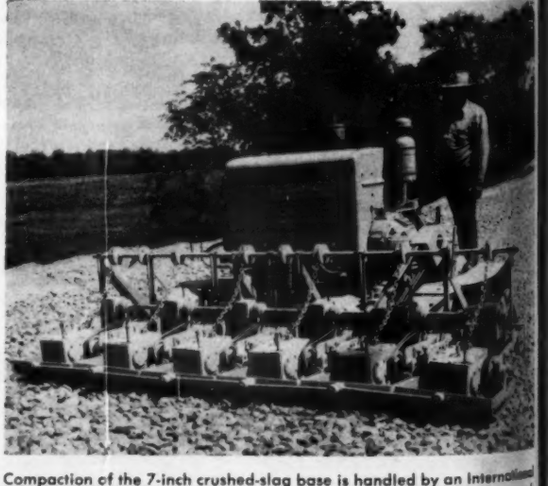
Paving spread

Franklin mechanized its paving spread wherever possible and in so doing was able to place an average of 2,200 to 2,500 square yards of concrete during an 8-hour workday. The contractor paved the two 24-foot roadways in 12-foot lanes, keeping forms set a minimum of 1,500 to 1,600 linear feet ahead of the paving spread.

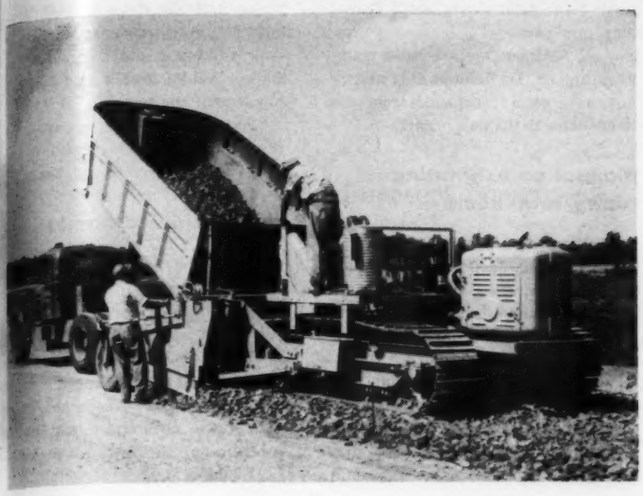
The paving train consisted of a Koehring 34-E Twinbatch paver that dumped in front of a Blaw-Knox spreader. Two passes were made by the spreader: one to trim the concrete to 7 inches so that reinforcing wire mesh could be placed, and a final pass to trim the additional concrete to the desired 9-inch slab thickness. Two portable Viber electric vibrators, pulled along behind the spreader, were used to consolidate the concrete adjacent to the forms.

A Heltzel Flex-Plane finishing-floating machine followed the spreader and handled the transverse finishing and floating operations. This machine, equipped with two transverse screeds to handle the finishing and a flat transverse plate to float the slab surface, requires only one operator. By using this rig, the contractor eliminated the need for another operator and a longitudinal floating machine behind the spreader.

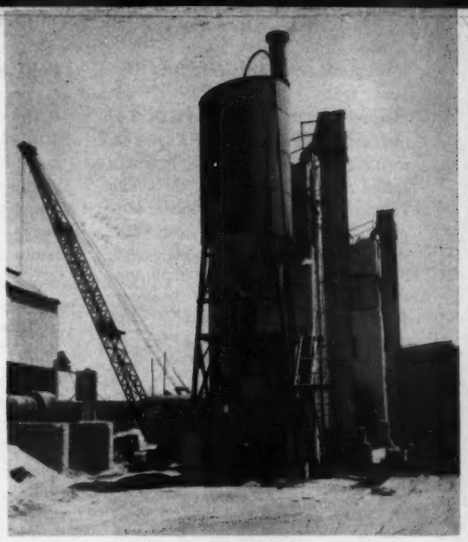
Franklin had about 6,000 linear feet of 10-inch Blaw-Knox forms on the job, and these were set in the 1-inch form trench for the 9-inch slab. The contractor set the sections by driving the form stakes with a Worthington



Compaction of the 7-inch crushed-slag base is handled by an International Vibro-Tamper with six vibrating shoes. These can be raised or lowered, depending on the width to be compacted.



◄ Union Paving Co., Philadelphia, Pa., handled the asphaltic-concrete paving work. Crushed slag for the 7-inch base is being placed by a Blaw-Knox stone spreader. A White truck-trailer feeds the machine.



Batches were supplied from a permanent plant. This cement setup has a rail siding for cement delivery. An undertrack hopper, screw conveyor, and enclosed bucket elevator serve the Blaw-Knox 300-barrel bin. ►

air hammer powered by a truck-mounted Worthington air compressor. A Buckeye Finegrader, riding the forms ahead of the paving spread, trimmed the subgrade; compaction was handled by a 10-ton 3-wheel roller.

Joints formed

Expansion joints, consisting of a ¾-inch-thick premolded filler, were formed ahead of the pavers on 78-foot 2-inch centers. Twelve carbon steel dowels, 16¾ inches long and 1¼ inches in diameter, were supported and passed through the joint filler to form the longitudinal connections at the joints.

A metal protective cap was placed over each joint filler so that paving could be continuous. These caps were removed after the slab was finished, and were replaced by a wood strip. This was tacked to the joint filler, which extended about ½ inch above the slab surface. The protruding strip kept the joints plumb and straight during concrete setting and permitted the hand-finishing crew, using a notched straightedge, to finish and line up the slab surfaces on both sides of the joint.

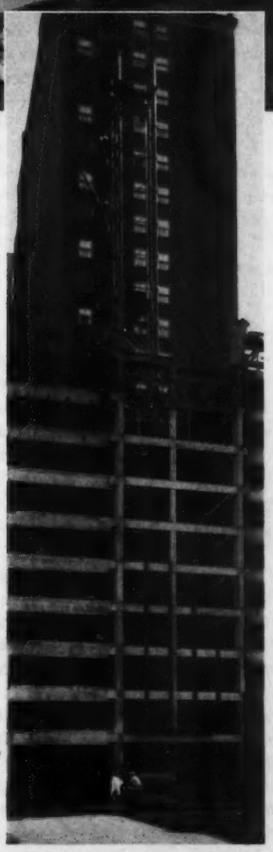
The concrete slab was sprayed with a curing compound, and the forms were stripped the following day.

A fleet of nine Mack trucks, each with a 5-batch capacity, was used to haul the concrete batch from a permanent batch plant owned by Buzby Bros., Inc., Westville, N. J. Only one cement and one aggregate bin were used.

The 3-compartment Blaw-Knox aggregate bin, charged by a Northwest Model 6 crane, loaded 1,267 pounds of sand, 1,277 pounds of 1½-inch stone, and 1,915 pounds of ¾-inch stone for each batch. Cement, delivered by bottom-dump rail cars, was transferred to the Blaw-Knox 300-barrel bin by an undertrack hopper, screw conveyor, and enclosed bucket elevator. A total of 870 pounds of cement per batch was weighed and dumped into the batch trucks at this setup, as well as 10 ounces of Aerolith air-entraining agent. The admixture was added to maintain a 4 to 5 per cent air content in the concrete.

Included in this contract was the

(*Continued on next page*)



"The finest hoist I ever operated"

Ask the operator on any job why he likes his Clyde and he'll tell you feature by feature.

Maybe the internally expanding band friction clutch, its extremely easy and smooth engagement and release and the elimination of shock loads is a feature he appreciates most. Or the fact that he need only 'toe' the extra heavy duty, large diameter brake for safe, sure and accurate load control.

No doubt he will tell you about some of the many other features he likes . . . anti-friction bearings throughout that result in greater line pull with less power . . . low cost maintenance as well as low operating costs . . . correct diameter, semi-steel drums that afford smooth and rapid free spooling.

Clyde operators and owners too, are Clyde's best hoist salesmen . . . the finest compliment that can be paid to the modern engineering and precision manufacture of the Clyde line of finest quality material handling equipment.

For the complete story on the advantages of Clyde's design, write for Bulletin 34A.

This 15-story parking garage in St. Louis is but one of the many jobs on which this Clyde Hoist has helped to maintain or even better construction schedules.

CLYDE IRON WORKS, Inc.

Established 1899
DULUTH 1, MINNESOTA

A SUBSIDIARY OF CLYDE RIC

HOISTS : DERRICKS : WHIRLEYS : UNLOADERS
BUILDERS TOWERS : CAR PULLERS : ROLLERS

For more facts, use Request Card at page 18 and circle No. 290

(Continued from preceding page)

placement of 82,000 square yards of 3-inch asphaltic-concrete freeway pavement on a 7-inch slag base. Franklin sublet asphalt-mix work to Union Paving Co., Philadelphia, Pa. A self-propelled Blaw-Knox stone spreader was used to place the 7-inch-thick

Expansion joints are formed with a premolded filler supporting 12 dowels. A brace connects the dowels at one end to fix them in the slab. Dowels will be free on the opposite side.

crushed-slag base in 24-foot roadways. The base course was compacted by an International Vibro-Tamper, primed, then topped with a 1½-inch binder course and a 1½-inch wearing surface of asphaltic concrete.

The freeway has 5-foot inside and 10-foot outside shoulders of penetrated macadam on a 2-inch gravel lift. A 74-foot depressed, grassed median separates the two roadways.

The exit and entrance ramps, consisting of asphaltic concrete on a 7-inch penetrated-macadam base, were edged with cast-in-place curbs. This curb work, sublet to Frapaul Construction Co., Inc., Rochelle Park, N. J., was handled by a portable Rex 11S mixer and Whiteman power buggies.

On this phase of the work the subcontractor used a scale to weigh the amounts of aggregate and cement being dumped into the mixer. Generally, a ratio of 2:1:2 of stone, sand, and cement, respectively, was used for curb concrete.

Personnel

T. F. McDonald was the superintendent and H. T. Barber, the assistant superintendent for Franklin Contracting. J. A. Best was the resident engineer for the New Jersey State Highway Department. THE END

Michigan roads group offers free booklets

■ Two brochures depicting the safety and economic benefits of expressway-type highways are offered by the Michigan Good Roads Federation. Copies of the small brochure, which is general in nature, are being sent to a limited list, with the request to keep one and pass the others along. The larger, more detailed brochure is available free of charge from the Michigan Good Roads Federation, 614 Michigan National Tower, Lansing 8, Mich.

Brill & Gray formed

■ The engineering and architectural firm of DeLeuw, Cather & Brill has been dissolved, but it will continue to function with the present staff to complete all outstanding assignments. Clinton B. F. Brill and Benjamin Gray have formed the partnership of Brill & Gray to carry on the engineering practice of the former partnership at 202 E. 44th St., New York City.

L-W opens branch

■ Suite 443 of the Surety Life Insurance Building at 1935 S. Main St., Salt Lake City, is the location of a new office for LeTourneau-Westinghouse Co., Peoria, Ill. The office will serve 12 western states and 5 Canadian provinces.

O. A. Krueger, western sales manager, and M. D. Hellman, his assistant, have been transferred from the home office to the new branch.

Manual on estimating piping man-hours

■ "Estimator's Piping Man Hour Manual" is intended to aid those determining the actual direct labor cost for the complete fabrication and installation of process piping for a given industrial or chemical plant.

Written by John S. Page and Jim G. Nation, the manual discusses shop fabrication of pipe and fittings; field fabrication and erection; alloy and nonferrous fabrication; underground piping; hangers and supports; painting; patent scaffolding; insulation; sample estimate; and technical information. Tables, graphs, and diagrams supplement the text.

The book may be purchased for $7.50 from the Gulf Publishing Co., P. O. Box 2608, Houston 1, Texas.

Joyce-Cridland names

■ Robert M. Tormey has been named sales manager of the newly formed Industrial Division of The Joyce-Cridland Co., Dayton, Ohio. At the same time, John M. Miller has been made general sales manager.

The Industrial Division now incorporates the sales and administrative functions of the Railroad & Industrial Jack and Materialift divisions.

Koenig rolls up 77,152 troub free with a Spicer 5-spe rans

"OPERATION DU

Here's 77,152 miles of conclusive proof that Spicer transmissions are your best choice for economy, dependability, and top-flight performance. Be sure to specify Spicer with your next truck order.

SPECIFICATIONS

Ford T-950 Serial No. 8706-X
Delivered September 17, 1957
Rated GCW—75,000-lb.
Wheelbase -156-in.
Engine—534-cu. in. SD V-8
Transmission—5-speed Spicer 6352 with 3-speed Spicer 7231 Auxiliary

All the facts shown here as to the service history of the Ford T-950 truck serial No. 8706-X used in the Koenig Coal and Supply Company's operation are true, to the best of my knowledge and belief.

Grover Dowd
Maintenance Superintendent
Koenig Coal & Supply Company

FLORENCE M. FOWLER NOTARY PUBLIC WAYNE COUNTY

Florence M. Fowler
Notary Public
Wayne County, Michigan

Management

Inspection Department: General functions

by GEORGE E. DEATHERAGE, P. E.
construction consultant

The number of inspection functions and their scope varies with the size and nature of the work under construction, the thoroughness of the inspection, and how much of it is allocated to outside inspection agencies.

On small work, the responsibility for all inspection may be delegated to a single individual, and the superintendent, project manager, or contractor may be required to make personal inspection for adherence to plans and specifications.

The primary requirement for any inspection is a specification, with or without explanatory detailed drawings. A specification is the particular and definite description of qualities, characteristics, and requirements of materials and processes. Specifications in terms of numerical values depend on standards of accurate measurement.

Inspection variations are encompassed within the terms "allowance," "unit tolerance," and "lot tolerance." Allowance designates the clearance between two parts, as between a shaft and its collar. Unit tolerance indicates the amount of variation that can be allowed between similar pieces when all are being made to the same specification. That is, all parts are to meet a certain dimension within definite permissible limits. Lot tolerance is the percentage of rejects that may be permissible. In a lot of wood screws, for instance, a certain number may not have heads, and it would be better to accept a shipment that has only ½ per cent rejects than to subject the whole shipment to a selection process that would eliminate them.

Quality is equivalent to a degree of perfection. It is not absolute and can be judged or realized only by comparison with some standard. When a standard has been specified, then the article can be described as better, worse, higher, or lower than the specified degree of perfection. In other words, quality is variable, and when permissible limits of variability have been stated, quality is defined for all practical purposes.

Terminology

Standard terminology on words, abbreviations, and symbols is necessary if specifications or standards are to be equally understood by the inspector and the fabricator or builder.

For instance, a common agreement must be reached on what is meant when the term "slump" is used in connection with concrete. Many confuse consistency with workability, in connection with the descriptive term "slump." The term "consistency," as applied to freshly mixed concrete, refers to its state of fluidity. If the concrete is plastic, it may readily be molded but changes form slowly when the form or support is removed. A concrete is said to be workable if it is readily placed in the forms for which it is intended. Concrete may be workable in large open forms but not in small forms containing numerous reinforcing rods.

Inspector

An inspector selected for any specific work or trade should be one versed in its skills. The welding inspector should certainly be experienced in this work and be able to pick up the tools and demonstrate the best technique. The same applies to inspectors for other trades.

On work where specific trade skills are not required, the civil engineer can be trained to be quite competent and satisfactory. Every inspector should be able to read the drawings and interpret the specifications quickly and accurately. Naturally, such individuals should have sound engineering judgment and be able to get along with men and supervisors.

In general, raw materials are to be considered as being worked on or assembled on the construction site in accordance with the plans and specifications. Fabricated materials are

...ree miles
...transmission during FORD'S
...DURABILITY"...

"Operation Durability" proved to be one of Ford's best-guarded secrets. In a daring test . . . launched months before the start of production . . . prototype models of Ford's new Super Duty Trucks were placed in the hands of leading fleets for use in normal day-to-day operations.

One of the vehicles, a Ford T-950 tandem, was put to workhorse duty hauling sand and gravel from Koenig's gravel plant at Oxford, Michigan to their concrete batching plants in Detroit.

This T-950, equipped with a Spicer 5-speed transmission and a Spicer 3-speed auxiliary transmission, has a rated GCW of 75,000 lbs. Yet it consistently pulled loads of 105,000 lbs. . . . even up to 120,000 lbs. . . . winter and summer, over hilly terrain, and through metropolitan Detroit's congested traffic.

In this dramatic demonstration of stamina and durability, the Spicer combination has logged 77,152 miles . . . without one bit of downtime in over 18 months. This record performance is verified by the sworn statements of Koenig's fleet superintendent, as well as the Ford engineers who supervised the project. For, in this truly authentic test, no mechanic was allowed to replace even a bolt without reporting it to the Ford engineers.

DANA Spicer

DANA CORPORATION
Toledo 1, Ohio

Serving Transportation—Transmissions • Auxiliaries • Universal Joints • Clutches • Propeller Shafts • Power Take-Offs • Torque Converters • Axles • Powr-Lok Differentials • Gear Boxes • Forgings • Stampings • Frames • Railway Drives
Many of these products are manufactured in Canada by Hayes Steel Products Limited, Merritton, Ontario

For more facts, use Request Card at page 18 and circle No. 291

This is the forty-sixth of a series of articles on Construction Management by George E. Deatherage, P. E., consultant to National Schools of Construction Management, P. O. Box 510, Weiser, Idaho, and P. O. Box 8415, Charlotte, N. C. The articles are based on an eight-volume "Manual of Advanced Construction Management" published by the National Schools.

(Continued from preceding page)

those items that are fabricated in vendors' shops, assembled, and shipped to the site ready for erection.

Incoming raw materials should be inspected before they are unloaded, and acceptance depends on whether the materials meet the specifications. Exceptions to this are those instances where the materials have been inspected at the point of shipment.

There are several ways of having materials inspected at the point of shipment: (1) inspection by private testing agencies or bureaus; (2) inspection and affidavit from the shipper; (3) and inspection by the contractor's own inspectors.

In each of these cases, the inspection certificates should be received ahead of the shipment so that unloading is not delayed. In any case, before unloading starts, the foreman in charge of unloading should be appraised of the fact that the materials have been approved or rejected. In cases where the specifications are vague or nonexistent, the superintendent must define, in his own mind, whether or not the materials are of a quality suitable for the work.

Whether or not there are specifications for any specific item, it should meet building-code requirements. Most towns, cities, counties, and states have building codes that define basic requirements for many of the most commonly used raw materials. Such codes should be consulted and used as a guide to inspection and test. Other sources of information are the data contained within the standard specification requirements of the American Society for Testing Materials, and the specifications from the various state and federal agencies.

Material specifications

A typical specification is for concrete and mortar sand, which must meet the requirements of the ASTM. The basic test is the identification of sand grains as opposed to loam, with which it is often confused. Loam is far less granular in structure, and such granular characteristics do not take the form of being hard and sharp. The next requirement is that the material must not be contaminated with fine loam or silt and/or organic matter. In other words, it must be clean and the equivalent of a washed product.

It is important in making all raw-material tests that the sample be a true average sample. Typical of this is the method for sampling concrete aggregate, or "quartering."

By this method, the material is taken from a representative section of the stock, is spread out in considerable quantity, and divided into four equal parts. Two opposite quarters are cast aside, and the other two are combined and again quartered. The reduction of the amount by casting aside two opposite quarters should be continued until the required weight of the aggregate is assured. Unless the material is quartered as described, most testing laboratories will require that at least 40 pounds of the material be submitted in order that they may strike an average sample.

Care must be taken when sampling to enclose the material in a stout sack and attach a card showing the contract number and name of the job, together with the name of the party producing the aggregate, the particular title or brand under which the material is sold, and the location of the pit. The same procedure is followed if bottled samples are taken.

Other materials

Job inspection of gravel and crushed stone should first consider the size of the material particles as meeting the specifications or the job requirements. Obviously, thin walls and beams heavily reinforced will take smaller gravel or stone than heavier foundations and nonreinforced structures.

Basically, the best thing to watch for is that the material be hard. Many crushed limestones, sandstones, etc., are soft and will break up easily, while some will disintegrate when they are immersed in water or subjected to alternate wetting and drying. Such a material is not a proper one for concrete and should not be used. It is quite simple and easy to test these aggregates by subjecting them to a light hammer test under both wet and dry conditions.

The usual requirements for cement are that it meet the standards of the ASTM. If purchasing cement in carload lots, it is best to request that each shipment be accompanied by Mill Test Certificates, these being the

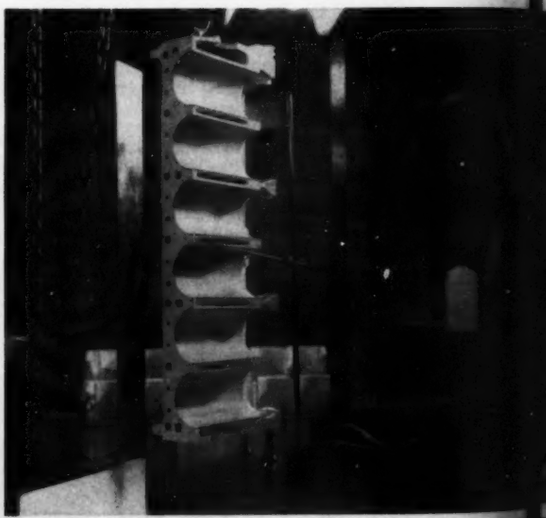
3 reasons why you eliminat

Reason 1

GMC has the most rigid quality-control standards* in the industry. Example—every truck must pass over 1,000 detailed inspections before it gets GMC's OK.

Cab Weld Test — Day-in and day-out, this hammer and chisel are probing spot welds everywhere on the cab, even the unseen, hard-to-get-at spots. Cabs *must* meet GMC perfection before they are released for mounting on the chassis.

Slicer Test — Periodically, standard production engine blocks and cylinder heads are pulled from the assembly line and sliced into 12 to 15 sections. Water jackets and passages, cylinders, supporting members and the like are all accurately checked to make sure they meet rigid blueprint specifications . . . make sure GMC Truck engines are rugged enough to stand up under the most extreme conditions.



Clutch Spin Test — Truck parts in this phase of the GMC quality-control program are subjected to conditions far beyond those experienced by truck owners. This is where we *try* to make parts break by spinning them until they fly into pieces. Then we find out why . . . and correct it.

* Rigid quality-control, creative designing and engineering are the results of Operation "High Gear"—a dynamic GMC program that is paying off with the greatest money-saving, money-making advances in truck history.

manufacturers' affidavits that the cement meets ASTM specifications and presenting the technical test data to support the statement. Requests for these test certificates should be stated in the purchase order for the material.

Ready-mix concrete plants are usually in a position to supply certificates from resident inspectors as to the mixes being supplied in strict accordance with specifications, and they will periodically supply the regular 14 and 28-day tests to a customer free of charge. In other words, the concrete being supplied will be certified at the time of delivery and then later verified by the regular cylinder-test reports. When a concern is constantly engaged in using concrete on the various jobs, it is worthwhile to issue a standard-practice set of instructions to the field so that all tests are handled in the same manner and on the same basis and as a regular procedure.

Standard specifications for cast stone are covered by the American Concrete Institute. Inspection should be made for damage in shipment, spalling off of corners, sharp edges, etc. Cast stone should be crated for shipment the same as a limestone product. This material, most of which is made from white cement, will stain if left in contact with the ground or exposed to the weather.

Usually, concrete blocks with less than 25 per cent core space are classed as solid and all others as hollow. The volume of core space in any block should not exceed 50 per cent of the total volume of the block.

A good or bad block can usually be spotted immediately by the job superintendent. These are porous when the broken surfaces are exposed, are easily broken when struck with a light hammer, and give off a dull thud when struck instead of a sharp "ping." Good blocks should bear the manufacturer's identification mark molded in them and have a mark indicating whether they are load or nonload-bearing. Cinder and other lightweight blocks should not be used below grade if they will be in contact with the earth. All concrete block must conform to ASTM standards.

Steel for concrete reinforcement is of two general types: billet steel and rail steel, the latter being rods rolled from used steel rails. The danger in using rail steel is that it is high-carbon and quickly broken when subject to impact. An on-the-job test can be made by placing a rod or two across supports and striking them smartly with a sledge hammer, or to bend it 180 degrees. A poor high-carbon steel will either snap in two or show definite signs of cracking and weakening. All rods should be free of rust or scale.

All reinforcing should meet the requirements of the ASTM. Mill Test Certificates can be secured from the distributor or manufacturer on all materials supplied.

If specifications are available for material to be used, the inspection is quite simple: it is merely examined and tested to see if it meets requirements. Where no specifications exist and the materials are said to be the best of their respective kinds, it is up to construction management to determine whether or not the materials meet an acceptable standard. Standards are available on most construction materials from the American Standards Association, Inc., 70 E. 45th St., New York City. Further information can be secured from the Commodity Standards Division of the U. S. Department of Commerce, Washington, D. C.

(Next month's article will deal with "Inspection Department: Fabricated materials.")

Soil, materials surveys by aerial photographs

■ Four papers in Bulletin 213 from the Highway Research Board cover aspects of "Soil and Materials Surveys by Use of Aerial Photographs."

Under discussion are the engineering soil survey and its relation to engineering problems; an engineering soil survey of Fayette County, Ky.; air-photo analysis of terrain for highway location studies in Maine; and gravel prospecting by use of aerial photographic interpretation. These papers should be helpful to design and soils personnel concerned with highway location and with materials location and procurement. Pictures, tables, diagrams, and lists of references abound.

Priced at $1.20, the bulletin may be purchased from the HRB, 2101 Constitution Ave., Washington 25, D. C.

Steel reinforcement for test pavements

■ Six papers on "Continuous Steel Reinforcement for Experimental Concrete Pavements" are contained in Bulletin 214 from the Highway Research Board, 2101 Constitution Ave., Washington 25, D. C.

Chapters give data on an analysis of special problems in continuously reinforced concrete pavements; 10-year reports from Illinois and New Jersey; an 8-year report from California; two reports from Pennsylvania; and problems. Formulas, tables, graphs, and pictures supplement the text.

Priced at $2.40, the bulletin may be purchased from the HRB.

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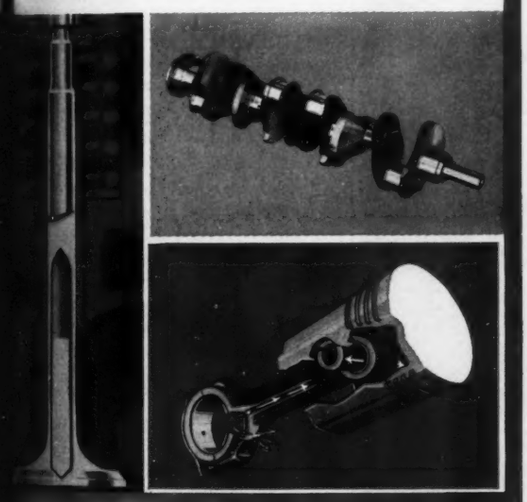
There's additional life and dependability in GMC engines with "free-turn", sodium-cooled exhaust valves. Localized hot spots are prevented. Heat is rapidly transferred away from valve heads. (Upper). Forged, Tocco-hardened crankshafts in GMC engines have extremely hard, long-lasting bearing surfaces and softer cores for high torsional rigidity. (Lower). Pistons are weight-controlled to within ⅛ oz. for balanced power. Rifle-drilled connecting rods assure positive piston pin lubrication. M-400 bearings last 7 times longer than others.



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River channel widening job is done without draglines; drainage ditch lowers water table to permit work by . . .

Scrapers in a river bed

Pushed by a TC-12 with twin engines, a Euclid TS-24 cuts out a section for the San Antonio River channel. A drainage ditch alongside the new channel carried the normal river flow and lowered the water table.

When the contractor first took a look at his job of widening the San Antonio River channel, it appeared that the excavation would have to be done with dragline and haul units.

The water table was high, the clay was saturated with water, and the hauls were over a mile long. Scrapers could haul the dirt more cheaply, but the ground was too wet.

After studying the problem more carefully, the contractor decided that the ground could be drained by digging a ditch to channel depth along one edge of the waterway. The ditch, he figured, would not only lower the water table, but also handle the normal flow of the river. The plan worked. Scrapers cut out the channel faster and cheaper than would have been possible with draglines.

Boyd Callan Co., Waco, Texas, had the $1,264,000 contract for improving about 5 miles of the channel of the San Antonio River just south of San Antonio, Texas. Callan joined forces with B. D. McMillan, Inc., to move the 3.7 million cubic yards of dirt.

The widening of the channel on the downstream end of the river completes the first of an 8-unit project designed to relieve the serious flood problem in San Antonio. The floods of 1921, '46, and '51 turned the streets of the city into rivers and caused millions of dollars in property damage.

To prevent the catastrophe from recurring, it will be necessary to improve about 31 miles of the San Antonio River and its tributaries. Widening and deepening the channels to handle the flood flows is a tremendous job. The project requires 9,200,000 cubic yards of excavation, and it will take about six years to complete.

The work is being done by the Fort Worth District of the U. S. Army Corps of Engineers, with local interests represented by the San Antonio River Authority. For the widening of the channels to bottom widths varying from 20 to 280 feet, the federal government will spend $14,700,000. For the right-of-way and some 10 bridges, the San Antonio River Authority will spend about $9 million.

Tricky channel excavation

At the outlet end of the channel, where Boyd Callan worked, the bottom width is at its maximum of 280 feet. The channel contained a 2½-foot-deep, 30-foot-wide pilot channel to handle the normal flow of the river. The unlined channel has 2½ to 1 side slopes that drop down to an average depth of about 18 feet. Although at times the new channel cuts out a bend in the river, it normally follows the course of the San Antonio.

Callan's biggest problem was water.

Meet the demand for premixing with SMITH TILTERS

Each year more and more quality-conscious engineers are specifying critical concrete. *You* can meet this demand by premixing with Smith Tilters —by depending on one quality-trained plant man instead of 20 or 30 truck drivers.

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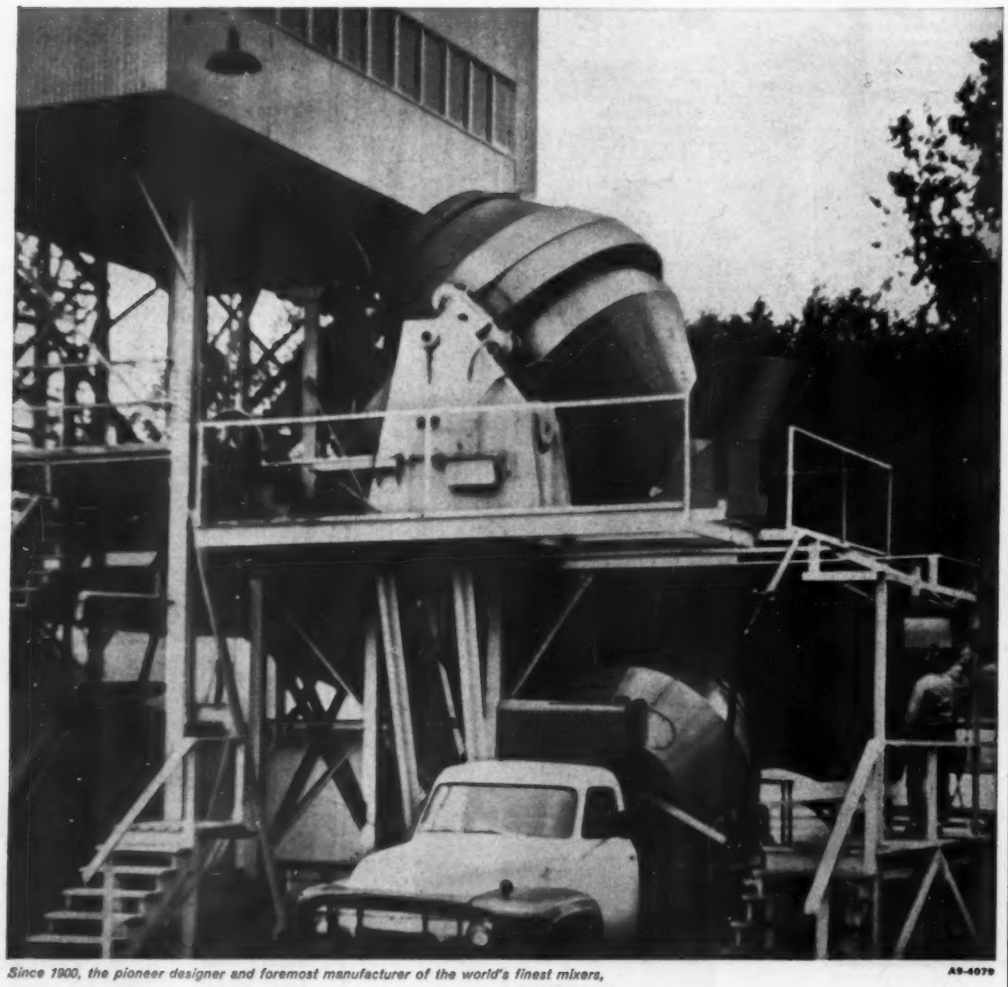
The superior mixing action and sturdy construction of Smith Tilters — from 2 to 10 yards capacity—have made them the standard of the ready mix industry. Ask your local Smith distributor for proof — or write us direct for more information.



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A Euclid TC-12 with dozer works along the edge of a slope cut. Earlier in the job, the rig was effective in pushing down trees, 4 to 5 feet in diameter, that stood in the path of the new channel.

When it wasn't coming out of the skies, it was coming out of the ground. He could do nothing about the rain, but there was a way to lower the high water table. A 2-yard dragline was used to dig a drainage ditch along one side of the new channel. The ditch, excavated to the grade of the channel bottom, eventually became a part of the new channel. The ditch served to carry the normal flow of the river as well as lower the water table.

With the ground free of water, three Euclid TS-24 scrapers were able to move most of the dirt. A variety of material was encountered in the cut. Clay, sand, and gravel could be moved without difficulty by the scrapers, but an Ateco ripper mounted on a Euclid TC-12 pusher had to rip the sandstone before it could be picked up by the scrapers.

According to B. D. McMillan, co-owner of the company, the big twin-engine jobs paid their way. The greater power, speed, and capacity of the machines were worth the extra price. McMillan went "twins" all the way, using a Euclid TC-12 pusher to load the TS-24's. When the two rigs butted together in the cut, there were 964 horses at work.

The abandoned gravel pits along the edge of the river served as convenient places to waste the excavated material. The average haul to the ten pits spotted along the river was about 1¼ miles.

Clearing

Even before the first scraper picked up a load in the channel, a lot of work had been done on the project. Clearing was a big item. Fed by the waters of the San Antonio River, a heavy growth of large pecan trees stood in the way of the new channel. Some of the trees were 4 to 5 feet in diameter and had deep tap roots.

But the big trees proved no match for the contractor's equipment. Faster than Paul Bunyan could cut down a Michigan pine, a Euclid TC-12 dozer knocked down a big pecan tree. Making use of the torque converter and automatic transmission, the operator could rock the dozer back and forth with the motion of the tree until the tap root popped and the tree went over. After the trees were knocked down, a Cat D8 tractor raked them into piles for burning.

The resident engineer overseeing the work for the Corps is S. G. Garrett. The field engineer is E. R. Henderson.

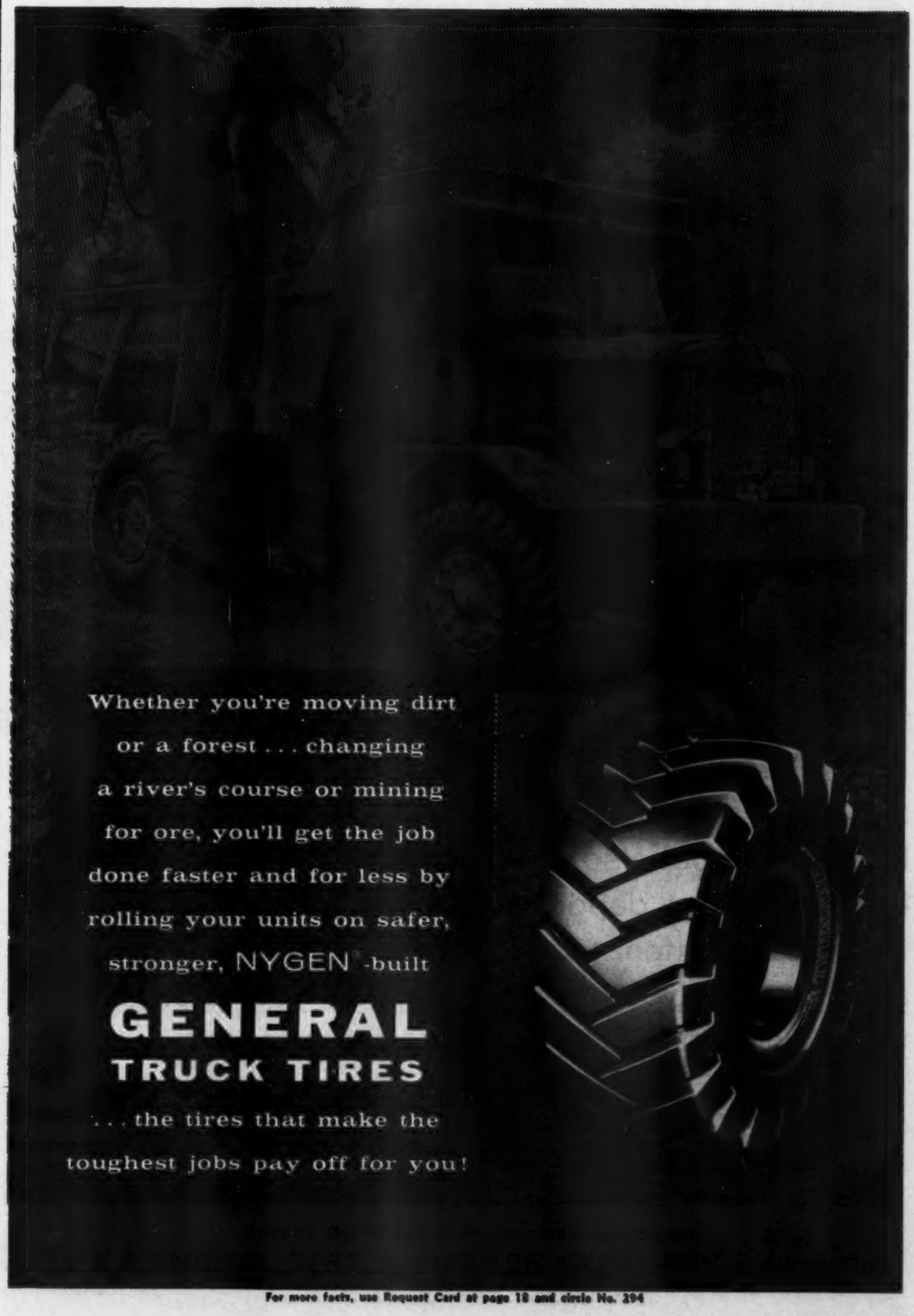
The superintendent for Boyd Callan Co. was Donald Hand. B. D. McMillan, co-owner of the company, was often on the job to check on the progress of the work. THE END

New handbook of details for industrial buildings

■ "Industrial Building Details," by Duane F. Roycraft, presents over 1,500 architectural details, drawn to scale, for the contemporary industrial building. The book, an expanded version of an earlier work, is intended as a source book for architects, engineers, designers, draftsmen, plant engineers, engineering departments, and industrial building contractors.

Drawings and brief explanations are given for such items as walls and windows, roof and parapets, etc. Abbreviations, a key to materials, and an index conclude the 356-page book.

Priced at $12.75, copies may be purchased from F. W. Dodge Corp., 119 W. 40th St., New York 18, N. Y.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NEAR THE PRIEST RAPIDS DAM on the Columbia River in Washington, a Manitowoc Model 3500, converted for dragline use, loads gravel into a truck hauling to the aggregate plant. Merritt-Chapman & Scott Corp., New York City, is building the dam and hydroelectric plant for the Public Utility District of Grant County under a $92 million contract.

HRB report analyzes traffic accidents

■ Six papers on "Traffic Accident Studies—1958" are contained in Bulletin 208 from the Highway Research Board, 2101 Constitution Ave., Washington 25, D. C. Data is given on traffic accidents and the quality of traffic flow; economic costs of motor-vehicle accidents; statistical evaluation of traffic-accident severity; an analysis of one-car accidents; predicting traffic accidents from roadway elements on urban extensions of state highways; and sampling procedures for determining speed characteristics at rural locations.

Graphs and tables supplement the $1.60 bulletin.

Caterpillar wins award from Michigan Tool

■ The home plant of the Caterpillar Tractor Co., Peoria, Ill., has been awarded the 1959 Honor Citation in the road-building and construction-machinery field for "excellence in gear production and for the effective use of modern gear-production equipment." The Michigan Tool Co., Detroit, is the annual sponsor of the citation.

Waukesha Motor expands West Coast operations

■ Three new branches will be opened by the Waukesha Motor Co., Waukesha, Wis. At the same time, the company has purchased the entire inventory of Waukesha and Climax engines and parts formerly held by its distributor, Waukesha Southern California. That firm, prior to its incorporation in the Waukesha distributor system, had been the Supply Division of the Bethlehem Pacific Coast Steel Corp.

Equipment included in the purchase is located in Bethlehem's establishments at Watts, Bakersfield, and Ventura, Calif., which are now Waukesha's three new branches.

American Hoist acquires Hetherington & Berner

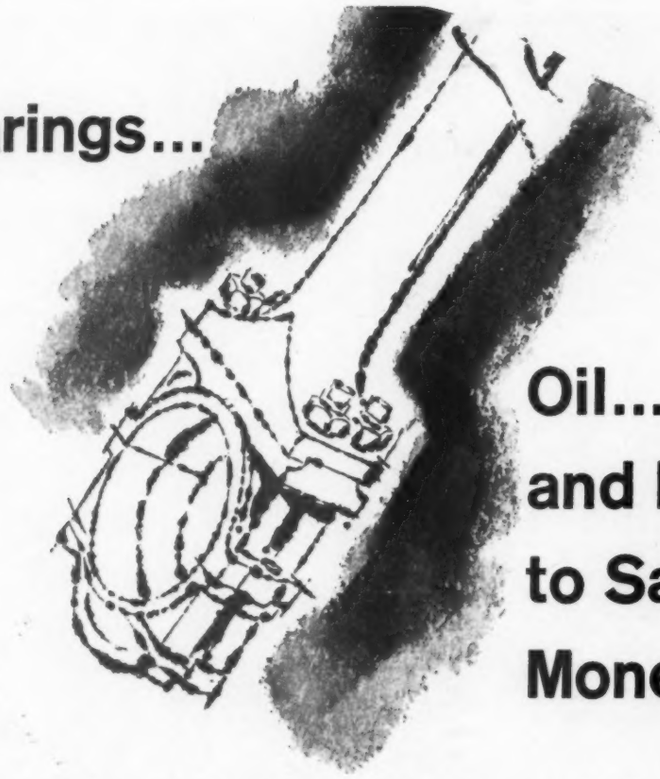
■ The Indianapolis manufacturing firm of Hetherington & Berner, producers of stationary and portable asphalt plants and paving machinery, has been acquired by American Hoist & Derrick Co., St. Paul, Minn. Donald R. Berner, vice president of the acquired company, will become general manager of the new wholly owned subsidiary.

Robert Berner, H&B president, has retired.

Blaw-Knox appoints

■ V. A. Miller has been named West Coast sales representative for the advanced-projects department of Blaw-Knox Co., Pittsburgh. This marks an expansion of the department, which was organized in January to coordinate development and handling of defense work and other large projects requiring efforts of more than one division of the firm.

Bearings...



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ROCK LEVELING is a big part of the job of modifying a 2.126-mile section of Georgia's Atlanta-Macon freeway to bring it to interstate standards. This International TD-24 is dozing some of the 65,000 yards of rock involved in the contract. Unclassified excavation and borrow come to 1,100,000 yards. Rock along this stretch is being used in a cloverleaf and service-road connection.

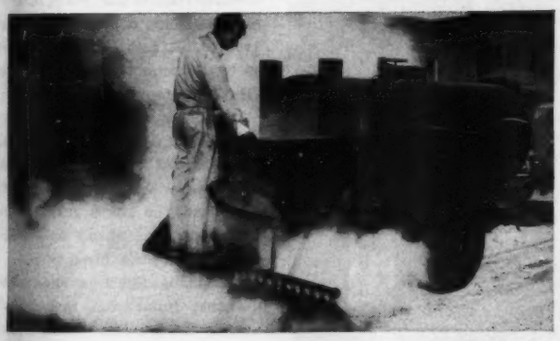
...ok covers dynamics of framed structures

...Dynamics of Framed Structures," ...Grover L. Rogers, is an introduc...ory treatise using the modal-analysis ...viewpoint, and it applies the theory ...f structural dynamics primarily to ...uildings and bridges. Utilizing two ...athematical tools—matrices and or...thogonal functions—as engineering ...ools, the author presents the analyti...al aspects of dynamic disturbances ...n structures.

Chapters cover such topics as dy...amic disturbances; structures with one, two, and many degrees of freedom; free vibrations of slender, elastic beams; inelastic beams and corrections to the theory of elastic beams; beams subjected to arbitrary disturbances; continuous beams; rigid frames; floor systems; and energy methods in structural dynamics. Formulas, diagrams, and tables abound.

The $10.25 book may be purchased from John Wiley & Sons, Inc., 440 Fourth Ave., New York 16, N. Y.

STANDARD STEEL "S-J"
Maintenance Distributor



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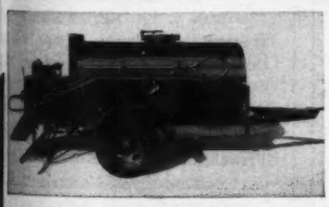

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Specific Gravity ..... 1.28 Max.
Durometer Hardness ..... 80 ± 3
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SEALTIGHT PVC Waterstops are extruded from a special PVC compound with added plasticizer and stabilizer to provide all of the necessary qualifications of a true waterstop. The exclusive cross-section design features a unique rib that has a vertical surface on the leading edge and a diagonal surface on the trailing edge to provide a tenacious grip to the concrete in which the waterstop is embedded . . . the special center bulb provides the ability for the waterstop to successfully handle tremendous pressures caused by concrete movements. SEALTIGHT PVC Waterstops are strong and flexible . . . on-the-job splicing may be accomplished quick and easy without special equipment. Ideal for installation in concrete structures of all types. SEALTIGHT PVC Waterstops offer the construction industry the top-quality product in its field at a competitive price . . . specify SEALTIGHT PVC Waterstops when you want a 100% watertight joint.

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- Air Entraining Agents.
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Portable belt conveyor loads scraper a minute

Loading a Euclid S-18 scraper is a one-minute operation for this Kolman Model 101 conveyor-loader. It is working on the railroad relocation job that is part of preliminary work on the Howard A. Hanson Dam on the Green River in Washington.

But don't dirty up the water! That was a primary requirement for contractors working on the railroad relocations and other preliminary work for Howard A. Hanson Dam (formerly known as Eagle Gorge Dam), flood-control project on the Green River in the Cascade Mountains of western Washington. This watershed is the source of the water supply for the city of Tacoma, and contractors were forbidden to increase the [illegible] bidity of the river by more than [illegible] parts per million.

But the rigid sanitary and turbidity requirements of the watershed did not prevent the several contractors from meeting the schedule for the relocation of 14 miles of Northern Pacific railroad main line, plus several miles of spurs. The four contracts, totaling $15 million for this preliminary work, were shared by Morrison-Knudsen Co., Inc., Boise, Idaho; Slate-Hall-Hamilton, Portland; and Paul Jarvis, Inc., Seattle. The rock-fill dam is being built by Henry Kaiser Co. and Raymond International Inc., for the Seattle District of the U. S. Army Corps of Engineers.

One of the key operations in the M-K contracts was the movement of large quantities of borrow. A big conveyor-loader with a 48-inch belt was operated in a series of pits along the right-of-way and was located as close as possible to the largest embankments.

In the pits, as many as five Cat D8 dozers brought material in to the slot where a D9 with U-dozer fed the receiving hopper of the conveyor. A fleet of rubber-tire scrapers, which were loaded at a rate of one per minute, hauled the material to the big fills; some of these were as high as 110 feet and contained as much as 885,000 cubic yards of material—all of it borrow.

In a later stage, the conveyor was fitted with a 10-inch grizzly and a 4×8-foot shaker screen with 3-inch-square openings to produce gravel subballast for the track. This material was hauled up to 2½ miles to the roadbed in hired trucks.

Stabilizing slide areas and removing unstable foundation material were among the problems of the contractor. Organic and other unstable material was stripped from the foundation area of the fills by a spread of tractor-drawn scrapers and dozers. Some of the deeper peat deposits had to be excavated by dragline.

Under one of the high embankments, the contractor built a huge French drain to intercept water from

A partial list of equipment used by M-K includes:

- Kolman 101 conveyor-loader
- Northwest 80-D dragline and shovel
- Euclid end-dumps
- Euclid S-18 scrapers
- Euclid TC-12 tractor
- Euclid TD-23 scrapers
- Euclid TS-24 scraper
- Cat DW21 scrapers
- Cat D8 tractors with Ateco rippers, blade rippers, Cat 462 scrapers, dozers
- Cat D9 tractor-dozers
- Cat No. 12 motor graders
- Gardner-Denver 123 Air Tracs

NOW IN USE ON THE GREAT NEW "SEAWAY"

Custom built to meet this exceptional requirement on the gate lifter "Grasse River"

40,000 lb. Block utilizing fourteen 48" sheaves reeved with 28 parts of 1⅜" wire line. Safe working load of 370 tons.

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McKISSICK PRODUCTS CORPORATION
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◄ Scrapers pull into line to pick up loads. All of the rigs are side-boarded to increase their capacity. Some of the fills required for the work were as high as 110 feet and contained up to 885,000 yards of borrow.

The crew prepares to move the belt-conveyor loading setup from one pit to another. The rig loaded borrow from a series of pits along the railroad right-of-way. One tractor will be hooked on in front and another behind to move the loader. ►

an adjacent hillside. This big rock blanket was 4,000 feet long, 10 feet thick, and as much as 300 feet wide. It contained some 50,000 cubic yards of rock.

In addition to the normal difficulty of working with peat, silt, and other unstable materials, these contractors were faced with the constant problem of preventing dirty water from getting into the river. This meant the construction of settling basins and the diversion of all dirty water through them before water was released into the river. Flowing streams had to be diverted around work areas, and other precautions had to be taken.

Probably the trickiest part of the entire relocation job was that of making the closures when the new alignment was substantially complete and getting the trains into operation on the new line. This work had to be done in a period of seven days, and the line could be kept out of service for only the 7-hour period between 7 a.m. and 2 p.m.

Among other work that had to be completed in this short period was the removal of a temporary bridge. Closures between the old and new alignments were made at four points during the period without incident.

The entire watershed is closed to the public; all entrances have watchmen and gates. There are no public roads through the area, the only access being over private logging roads and the construction roads built by the contractor. Since private cars are not permitted in the area, the contractors provided transportation from their field offices outside the gates to the work areas inside. Rigid sanitary rules were observed at all times.

The resident engineer for the Seattle District of the Corps of Engineers is James F. Grafton, the assistant resident engineer is Mickey Walker, and chief of technical controls (soils and concrete) is Keith Bestwick. Col. R. J. B. Page was district engineer of the Seattle District until his reassignment ended his tour of duty, June 26.

Project manager for Morrison-Knudsen Co., Inc., on Stages 1 and 4 of the railroad relocations was William W. "Bill" Hudson. General superintendents on Stages 1 and 4, respectively, were George Eckert and M. H. Guyot. The project engineers were R. D. "Bob" Gray and R. J. Hofman. The office manager was Ray C. Bulls.

THE END

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Paving spread geared for top speed

(Additional photo on front cover)

After a lunch stop, work is resumed on the paving of U. S. 10 near Snoqualmie Pass, Washington. Twelve batch trucks are lined up ahead of the two pavers.

Twin vibrating bars, on hydraulic mount ahead of finisher, spread and consolidate concrete placed by two paving rigs

by RALPH MONSON, field edit

The approaches to Snoqualmie Pass, where U. S. 10 crosses the Cascade Mountains in central Washington, isn't the most ideal area for paving work. The portion just east of the summit, where the highway skirts the rugged shore line of Keechelus Reservoir, included some of the toughest construction problems encountered in the state for the grading and paving crews.

Grading of this 10-mile section was substantially completed under a series of four simultaneous and contiguous projects. (See "Heavy Rock Excavation Widens Mountain Road," C&E, April, 1958, page 74.) The paving of a 10.5-mile section of double 24-foot roadway was done by Sather & Sons, Spokane, under two contracts—one for 5.4 miles at $861,583 and the other for 5.1 miles at $931,436.

On this job, B. F. Hansen served as resident engineer for the Washington Department of Highways, assisted by J. D. Almone, Roy Fairbanks, and Tom Christenson. The project was under the jurisdiction of the Yakima District of the department, which has R. H. Pyle as district engineer. W. A. Bugge is director of highways in Washington.

The Sather brothers, Max and Art, personally supervised the operation, making frequent visits to the job during the season. The job superintendent was Andrew Ekre, the plant superintendent, John Swanneck, and the mixer foreman, Bob Gro... Throughout the job, equipment was deployed and used to keep the spread on the move. Efficient operations were not confined to the paving spread; they started at the batch plant...

A Hough HO Payloader works widely separated stockpiles, built the year previous under separate contract, to keep haul trucks filled. It loads an International 7-yard rig with coarse aggregates in 40 seconds.

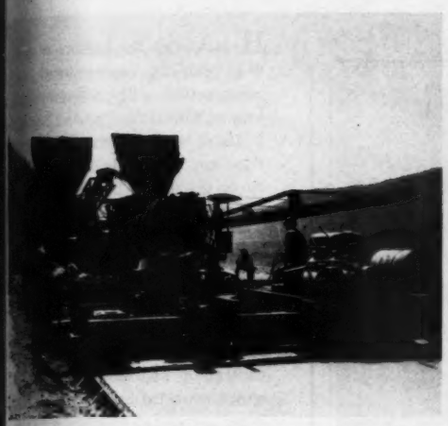
At the batch plant, a Reo truck dumps into a 3-compartment hopper. Clam gates release the material to the horizontal conveyor under the bins. An inclined conveyor brings the material to the batch plant.

This man operates a panel that controls ... gates, elevating conveyor, and—through ... ing cables—the distributor atop the fully auto... C. S. Johnson plant.

Cement is stored in the 840-barrel silo set up beside the Johnson plant. Permanente cement is delivered in Trailmobile trailers pulled by Kenworth trucks. Aggregate receiving hoppers take advantage of the hillside location.

A Le Roi Tractair supplies air for the Cleveland pin hammer driving the form pins. The 5,500 feet of Blaw-Knox 8-inch forms was built up with lumber for the 9-inch slab.

Cleveland form tampers compact the grade under forms as a Cat grader levels the base, which was brought to grade by a shop-built strike-off riding forms and pushed by a tractor-dozer.

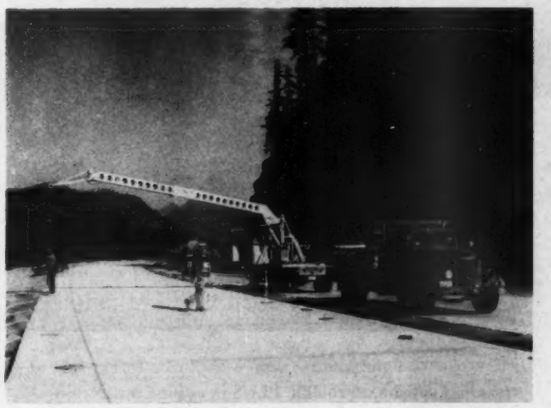


Two Koehring 34-E Twinbatch pavers work side by side within the forms as they place concrete for the 24-foot roadway. (Traffic uses the other roadway, and the shoulder is too narrow for the pavers.)

A Blaw-Knox finisher with twin Jackson vibrating bars spreads the mix. The front-mounted vibrators are on hydraulically operated arms. Vibrator motors are powered from a Jackson generator on the rig's frame.

Following a Heltzel Flex-Plane finisher is a Hunt Process spray rig that applies compound to the slab. Note the rock bank that was excavated for the roadway.

The day after concrete is placed, form pins are removed by a workman with a Cleveland pin puller. Sections are left alongside the slab.



Working close behind the pin-pulling operation is a Pitman Hydra-Lift, which loads the heavy sections to a waiting truck. The long boom of the Hydra-Lift easily reaches across the 24-foot-wide pavement to pick up forms on the far side.

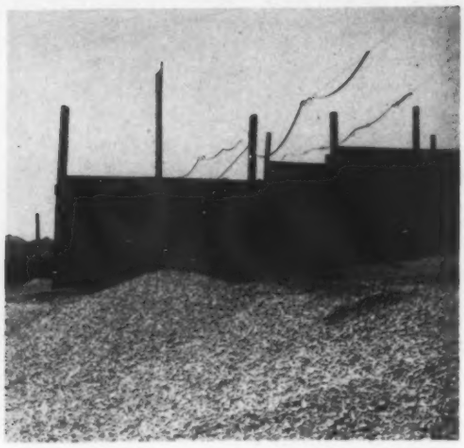
Two Clipper 36-hp saws with Concut blades leapfrog along the road to cut the 2¼-inch longitudinal joints. Each saw has a center-line guide and its own water truck. The 1½-inch transverse joints were cut with a 4-blade rig.

A Graco Bulldog pump applies Servicised compound to the joints. A Tractair supplies air to the pump and doubles as a tow tractor. Paper over the joint keeps out dirt. A shop-built roller is used to place the paper.

Inland Asphalt Co., Spokane, used this Madsen No. 349 asphalt plant for its subcontract work of paving shoulders and some approach lanes.

One roadway is complete; forms are set for the other. This pavement is one of the few in Washington where the entire 24-foot roadway was placed in a single pass.

The End.



Extreme heat made it necessary to cool aggregates going into concrete for Painted Rock Dam's diversion tunnel near Gila Bend, Ariz. Plastic garden hoses rigged over aggregate piles provide a fine spray, and evaporation helps cool the material. This was one of the tricks used to combat the job's chief problem—heat.

Sub beats the heat on diversion tunnel

Off-season work is done during night hours when temperature drops; water spray cools aggregates, ice cools water for concrete mixing

Heat was at the bottom of most the problems encountered during construction of the 975-foot-long diversion tunnel for Painted Rock Dam, a U. S. Army Corps of Engineers flood-control project on the Gila River near Gila Bend, Ariz.

Concrete placement on the outlet works had to be suspended during hot weather, then resumed again when it became cooler. Yet even in the off season, all lining work for the diversion tunnel was done at night, when air temperatures were lowest. The contractor used a continuous water spray, provided by perforated garden hoses suspended over the stockpiles, to cool aggregates. And the only available source of suitable water for concrete was a well where water was drawn out at a temperature of 80 degrees F. Drinking water was even more of a problem. The closest source of acceptable drinking water was at Sentinel, Ariz., 30 miles from the job site. All drinking water had to be trucked in, then cooled for use.

The prime contract for this project, which is intended to protect some 300,000 acres of highly developed irrigated lands in the Gila and lower Colorado watersheds, was awarded to Mittry Construction Co., Los Angeles, Calif., which sublet the entire outlet works phase to Ashton-Mardian Co., Phoenix. This is a joint venture of the Ashton Co., Inc., Tucson, and Mardian Construction Co., Phoenix. The project was planned and is being supervised by the Corps' Los Angeles District.

The dam is an earth-fill structure 4,800 feet long, rising to a height of 180 feet above the stream bed. The outlet works consist of a gated, reinforced-concrete intake structure, approximately 210 feet high, and a 25-foot-diameter concrete-lined tunnel extending 975 feet through the right abutment.

Intake structure

Designed to handle flows of up to 34,800 cfs, the tall intake structure contains three rectangular channels each fitted with a 10×18-foot hydraulically operated steel tainter gate. Through a series of transitions, the three rectangular channels merge to meet the 25-foot diameter of the tunnel. These transition sections involve very complicated formwork.

Forms for the structure were

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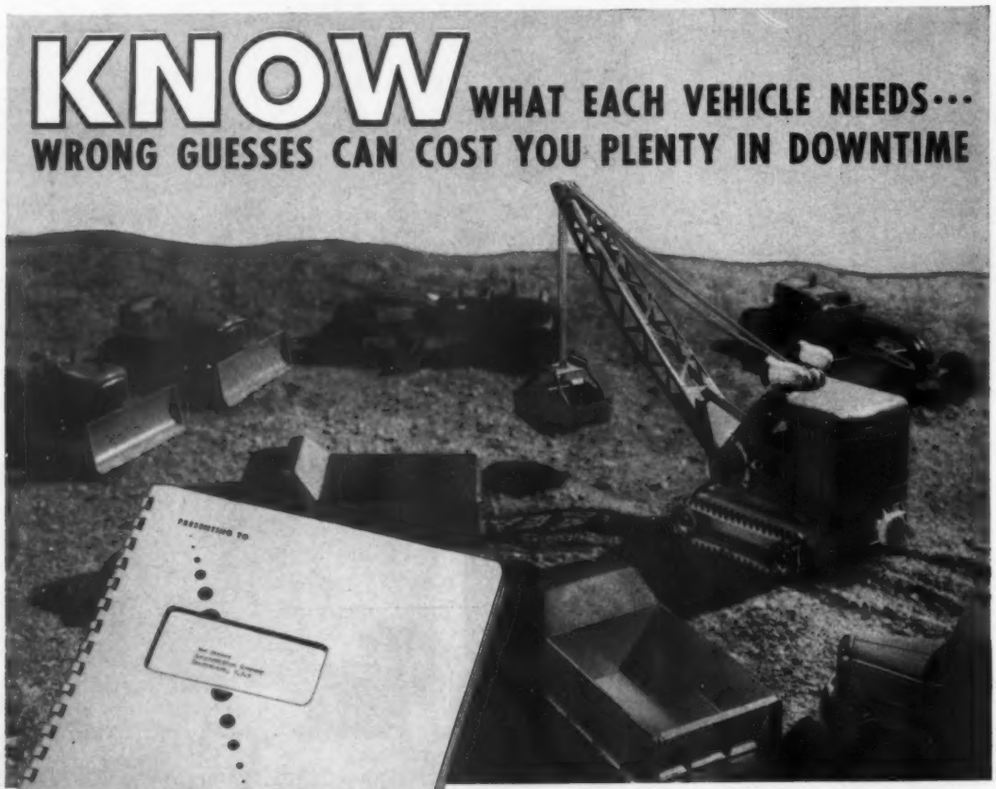

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For more facts, use Request Card at page 18 and circle No. 300

A Michigan 125A tractor shovel rolls the Rex double Pumpcrete into place in the tunnel for the next increment of work on the lining. The tractor shovel also pulled the machine out of the tunnel for servicing.

A "High Car"—an old truck-mounted drilling jumbo—carries the inclined riser line and cantilevered section of pipe that extends the Pumpcrete line into the form. The machine needed only limited servicing.

A form, built by Consolidated Western Steel Division, U. S. Steel, Phoenix, Ariz., is used for the tunnel lining job. The frame that raises and lowers the 25-foot section on the jumbo is controlled by hydraulic jacks.

of 1⅛-inch high-density, plastic-impregnated plywood sheeting on 4×6 studs spaced at 16-inch centers and tied with Superior hardware. A Bay City 35-ton motor crane and a Lorain 20-ton motor crane handled the forms and also assisted in the concrete placement.

The large tonnage of heavy reinforcing steel was furnished and placed by Acme Steel Co., Phoenix, which used a Link-Belt Speeder motor crane.

Three of the larger concrete placements in the lower portion of the intake structure took approximately 900 cubic yards of concrete each. The placing of this amount of concrete in one day taxed practically all of the available facilities. The mix was dry-batched from a Noble batch plant and hauled to Rex 34-E pavers. Two of the pavers were usually used on the large placements, with the third being called in on several occasions.

The Bay City and Lorain cranes bucketed the concrete directly from the mixers to the forms in Gar-Bro 1½-yard buckets. On these large placements, the Rex 200 double Pumpcrete used on the tunnel lining also pumped some of the concrete to the forms. Gar-Bro rubber tremies on the buckets aided in getting the concrete to the bottom of the lifts without segregation.

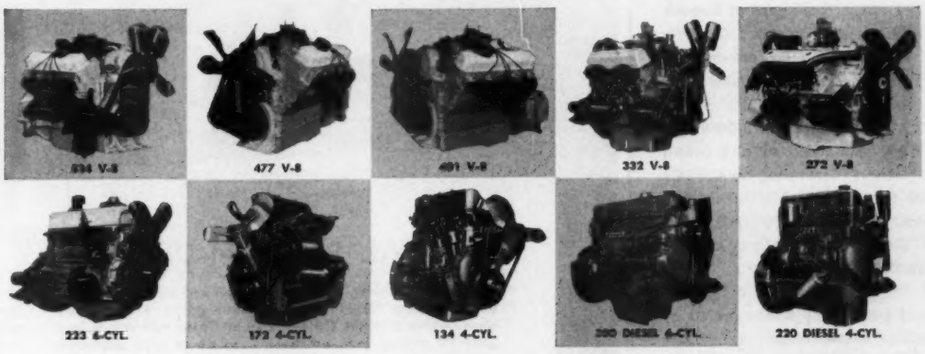
The finished intake structure will contain 11,500 cubic yards of concrete. It will be equipped with an automatic electric elevator to provide access from the top to the various lower levels. Access to the top of the structure will be over a 200-foot service bridge from the right abutment.

Tunnel excavation

Excavation of the 975-foot-long diversion tunnel was done in less than three months. The circular bore was excavated to approximately 29 feet in diameter to provide a 25-foot finished tunnel with 18 inches of concrete lining to the steel supports. The invert was not excavated with the main bore, but was excavated by dozers and rippers after the main tunnel was holed through.

Using a job-fabricated truck-mounted jumbo carrying 6 Gardner-Denver D-79 drifters and 4 Gardner-Denver air legs, the drilling crew averaged 90 holes per round. The

(*Continued on next page*)



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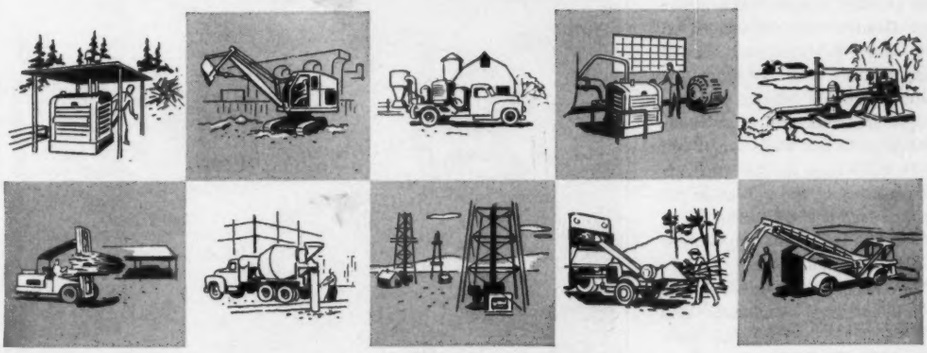

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YOUR JOB IS WELL-POWERED WHEN IT'S FORD-POWERED!

For more facts, use Request Card at page 18 and circle No. 301

A Rex double-drum paver walks into the tunnel to supply the concrete machine. The paver has a 3,000-pound air tugger mounted on top to help raise the bucket high enough to dump into the Pumpcrete hopper.

A modified Noble Mobile plant supplies concrete for the lining job. The plant can be operated from any point within 25 feet of the operator's platform by means of a remote-control unit. Here, the operator has a clear view of the discharge gates.

(*Continued from preceding page*)

holes were loaded with approximately 2 pounds to the cubic yard of Apache 40 per cent gelatin powder. Shooting 5 and 7-foot rounds, the crews averaged 17 feet per 18-hour double-shift day.

Arch supports made of 8-inch, 20-pound WF beams were set at 3, 5, and 7-foot centers, depending on the nature of the rock, with wood lagging between. Two Eimco 105 loaders and three Koehring Dumptors handled the muck.

Air for the drills and other air-powered equipment was supplied by 3 Gardner-Denver compressors having a combined capacity of 1,700 cfm. Tunnel ventilation was provided by a Joy 4,300-cfm blower operating through a 30-inch duct.

Place lining at night

All of the lining concrete was placed at night, when temperatures dipped. Garden hoses, suspended on cables above the stockpiles, cooled the aggregates.

Water posed the biggest problem. The only acceptable source of water for the concrete mix was a ranch well some 3.5 miles from the job site. This water came out of the well at 80 degrees F. It was trucked to the job in a 2,500-gallon tank truck and pumped into a storage tank, where ice was added to reduce the temperature to about 45 degrees. Sometimes this could be accomplished by simply adding block ice that was trucked out from Phoenix. At other times, it was necessary to run the ice through a shaving machine to speed the rate of cooling.

Since the concrete placement was limited to night hours, the contractor set up a schedule that required the use of a single 25-foot section of form. The form was stripped, moved ahead, cleaned, and re-set each day. Each night, the placing crew made the 180 to 200-yard placement in an average of 4½ hours.

At the start of the lining operation, a curb was built on each side of the invert to carry rails for the invert screed car. The invert concrete was then placed by Pumpcrete and finished by a 5-foot-long screed car that operated like a slip form.

The tunnel form, which was built by Consolidated Western Steel Division of U. S. Steel, Phoenix, traveled

30 Yd. BOTTOM-DUMPS

Loaded by big draglines or overhead hopper, a fleet of ten Bottom-Dump "Eucs" haul pervious gravel from borrow areas up to 2 miles from the dam. They will move well over 12 million yds. on these long hauls with maximum grades of 8%.

22-Ton REAR-DUMPS

Fourteen "Euc" Rear-Dumps are being used to haul ... and rock from the channel, diversion tunnel and ... excavations. These versatile haulers have been "stan... equipment on practically every major dam built ... past 20 years.

38 "Eucs" maintainin... 26 million y...

NAVAJO DAM in northwestern New Mexico will be the second largest ever built for the U. S. Bureau of Reclamation and one of the highest earth-fill dams in America. It will take nearly 5 years to build and will require 26 million yds. of compacted fill for the embankment that will rise a maximum of 405 feet. The resulting storage reservoir 34 miles long will provide irrigation water for 115,000 arid acres on the Navajo Indian Reservation.

Morrison-Knudsen Company, Inc., sponsor of the joint venture with Henry J. Kaiser Co. and F & S Contracting Co., already has 38 "Eucs" at work on this big, tough job. This Euclid ... includes 10 big "Twin" Scrapers, TC-12 ... Power Crawlers, 30 yd. Bottom-Dump ... Rear-Dumps of 22 ton payload capacity. ... choice of Euclid equipment to move this ... dous tonnage of compacted fill material ... based on years of experience with the de... able, high productive capacity of "Eucs" ... wide range of jobs.

Whether you're using earthmoving equip... on big projects like Navajo or small grading ... there are Euclid models to fit the job.

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The operator at the top of the conveyor signals to the operator of the Michigan 125A tractor shovel with colored lights to indicate the size of aggregate needed in the plant. The man atop the plant controls the conveyor and the distributor.

on wheels on the rails. The frame carrying the form was raised and lowered by Blackhawk 20-ton hydraulic jacks. The side segments were hinged to the crown segment and were moved in and out from the jumbo by standard steamboat ratchets. The form consisted of circular steel segments faced with ¼-inch steel plate and lined with ⅝-inch plastic-impregnated plywood.

The tunnel form was built in 5-foot chord sections. These were spread with bushings at the outside radius to provide the 1,000-foot radius required in the curved section of the tunnel. Where the point of curve ran into the straight tunnel, the bushings were removed and the form chord sections were bolted together to form this straight 25-foot bore.

Placing concrete

Aggregates were produced from a pit downstream from the dam site and were stockpiled on the job site adjacent to the modified Noble Mobile batch plant. A Michigan 125A tractor shovel moved the aggregates from the stockpiles to the receiving hopper of an inclined conveyor that fed the 100-ton storage bins.

A workman, stationed at the top of the plant where he could see into the bins, operated the conveyor controls and switched the distributor chute from bin to bin for the sand and two sizes of coarse aggregate. This workman signaled with a colored-light system to tell the tractor-shovel operator which size of aggregate was required.

Type V low-alkali cement was delivered by truck transports from the plant of the Arizona Portland Cement Co., and transferred by horizontal screw-and-bucket conveyor to the bin of the plant. The 1.25-yard batches were weighed automatically as the operator threw a starting switch. A remote-control unit permitted the plant operator to start the batching cycle and operate the gates of the batch hopper from any point within 25 feet of the operator's platform.

Batch trucks delivered the dry batches from the plant to a Rex 34-E double-drum paver in the tunnel. The paver mixed the concrete and deposited it in the hopper of a Rex Model 200 double Pumpcrete. In order to get the paver bucket high enough to dump into the Pumpcrete, the paver boom had to be raised to such a high angle that the normal bucket hoist was unable to move the bucket. To supply the necessary additional power, a Gardner-Denver 3,000-pound air tugger was mounted on top of the paver and rigged to pull the bucket.

From the Pumpcrete wye, the 8-inch concrete pipeline ran a short distance along the floor of the tunnel to a "High Car," where it was carried up to the top of the tunnel. This "High Car" was an old truck-mounted drilling jumbo rigged to carry the inclined riser pipe and the cantilevered section of pipe extending into the form.

With the "High Car" backed up to the form, the discharge pipe extended in nearly the length of the form. When it was in this position, the lines were hooked up and concrete placement started. The concrete was pumped into the form until the end

"TWIN" SCRAPERS and CRAWLERS

...of these big twin-power scrapers of nearly 600 total ...are moving 30 yd. loads of impervious core ma... ...to the fill. They are push loaded in the borrow pit ...Euclid TC-12 Tractors of 425 net h.p. to get maximum ...ds in the shortest possible time. Four TC-12's were purchased to push load the "Twin" Scrapers. With two engines and independent track drive, these "Euc" tractors have exceptional maneuverability with power and speed that give them unequalled work-ability on all big tractor jobs.

High Production at NAVAJO DAM

See your Euclid dealer for information on the complete line of "Euc" Scrapers, Crawler Tractors, Rear-Dump and Bottom-Dump Haulers . . . he can show you that Euclids give greater return on investment.

For more facts, circle No. 302

(Continued from preceding page)

The Rex 200 double Pumpcrete is serviced outside the 975-foot-long tunnel. The machine is on a 4-wheel trailer mount. Right now, it is being made ready for work, which is done at night when temperatures are at their lowest.

of the discharge pipe was buried. Then a section of the Pumpcrete line ahead of the "High Car" was removed, and the car moved ahead to a new position where the line was coupled up again. This process was repeated until the form was filled.

Just ahead of the "High Car," a "slugger valve" was inserted in the Pumpcrete line to permit the introduction of an occasional charge of high-pressure air to clear the line.

At the conclusion of each placement operation, the paver was walked out of the tunnel under its own power. The Pumpcrete machine was on a 4-wheel trailer mount that was pulled in and out of the tunnel for each placement operation by the Michigan 125A tractor shovel. This gave the service crews the advantage of being able to service these machines out in the open. The "High Car," which did not need daily servicing, was simply moved ahead, out of the way of the form crew.

Four Viber air-operated vibrators were used externally on the form to assist in consolidating the concrete. These were fitted with air-clamp attachments that made it very convenient to place them on various points on the face of the form as concrete placement progressed.

As soon as the form was removed on the morning following placement, the inside surface of the concrete was sprayed with Techkote white-pigmented curing compound applied with a power spray.

The estimated quantity of concrete for the tunnel lining was 7,000 cubic yards. This overran approximately 21 per cent because of the overbreak of the rock. As the lining was placed, 2-inch grout pipes were installed according to a predetermined schedule to make it more convenient for the grouting crews that followed.

Personnel

The Painted Rock Dam project is being carried out under the supervision of Col. C. T. Newton, district engineer of the Los Angeles District of the Corps of Engineers. Harry W. Thompson is chief of the engineering division. William Leen is chief of the district's construction division, and William Alldrich is area engineer of the Phoenix area. Representing the Corps on the job site are project engineer Donald G. Putnam, assistant resident engineer A. B. Maddinger, concrete technician H. W. Portier, and office engineer George W. Starch.

The supervisory staff for Ashton-Mardian during this phase of the project included general superintendent Carl Thompsen; tunnel-driving superintendent Bill Harris; tunnel-lining superintendent P. C. Carver; and project engineer Thomas McIntyre. THE END

Highway research group established in Ohio

■ A Highway Research Council of Ohio has been established to encourage research activities in highways in Ohio. Current members of the council are from the Ohio Department of Highways and The Ohio State University College of Engineering.

The university will offer the services of faculty, upper-class and graduate students, and laboratory facilities. The highway department will cooperate by offering researchers the use of control devices for field work and by coordinating field demonstrations with laboratory work.

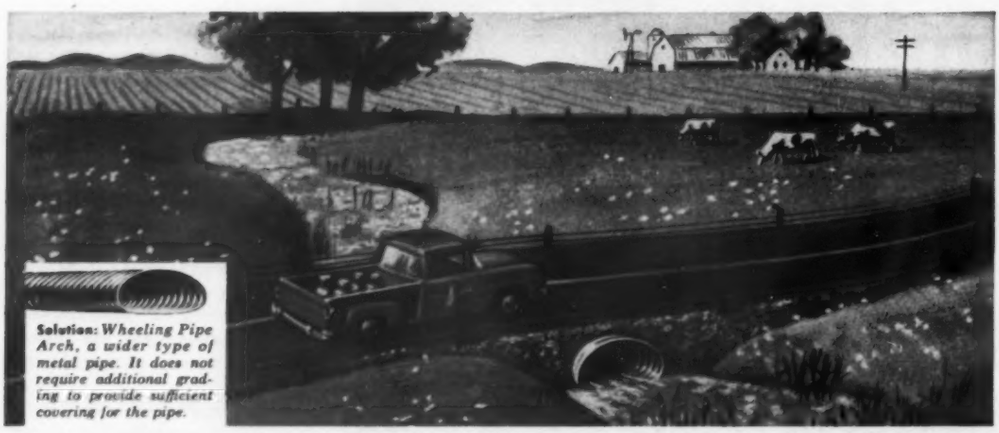
The work of the council will be coordinated closely with research activities of the American Association of State Highway Officials and other national organizations such as the U. S. Bureau of Public Roads and the Highway Research Board.

Wheeling

METAL CULVERT PIPE BY WHEELING

Problem: *How to channel the flow of this shallow, meandering creek? Standard round pipe would take too much headroom.*

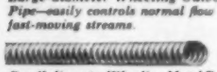
Headroom limited?



Solution: *Wheeling Pipe Arch, a wider type of metal pipe. It does not require additional grading to provide sufficient covering for the pipe.*

Use Wheeling Pipe Arch for fast drainage!

Large-diameter Wheeling Culvert Pipe—easily controls normal flow of fast-moving streams.



Small-diameter Wheeling Metal Pipe—ideal for farm and home drainage requirements.

Particularly effective for shallow streams, Wheeling Pipe Arch assures fast, efficient water flow. That's because it has a wide, comparatively flat base that permits more rapid drainage than round pipe of equal area. And it has the same toughness and durability that made other types of Wheeling Culverts famous.

Wheeling Metal Culvert Pipe or Pipe Arch, in copper-bearing steel or copper-bearing pure iron, plain galvanized or bituminous coated (with or without paved invert) is available in a wide range of gauges and diameters.

Write or call your nearest Wheeling warehouse, culvert plant, or sales office. Wheeling Corrugating Company, Wheeling, West Virginia.

WHEELING CORRUGATING COMPANY · IT'S WHEELING STEEL!

Immediate delivery on all stocked items from these warehouses: *Boston, Buffalo, Chicago, Columbus, Detroit, Kansas City, Louisville, Madison, Minneapolis, New Orleans, New York, Philadelphia, Richmond, St. Louis.* Sales Offices: *Atlanta, Houston*

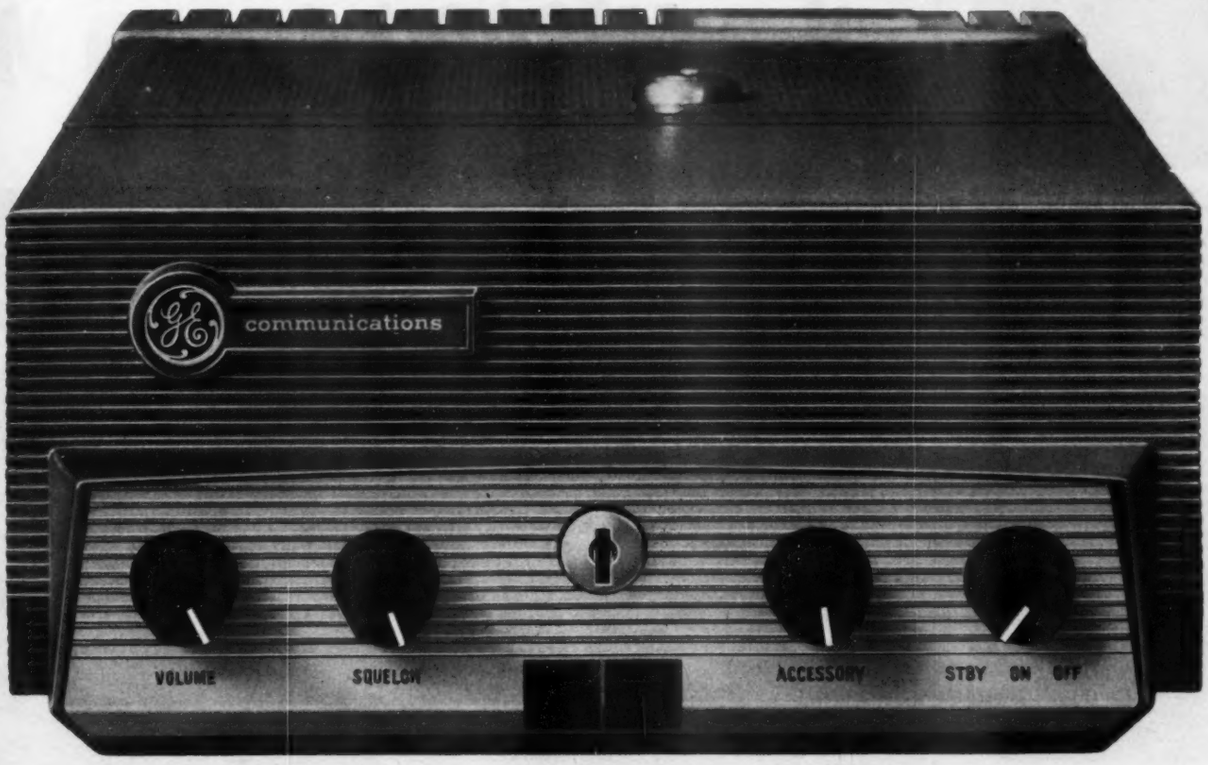
For more facts, use Request Card at page 18 and circle No. 303

New ARBA membership, special-events director

Harry Haller has joined the staff of the American Road Builders' Association as director of membership and special events. He will coordinate the program of soliciting members, which had been managed by heads of ARBA's various operating divisions, and will undertake certain special projects that have been under study for some time.

Haller, a former feature writer for the *Baltimore Sun*, worked with a number of public relations organizations in New York, and later as a free-lance consultant.

A MAMMOTH ROCK-EXCAVATION JOB IN TENNESSEE, involving 2,600,000 cubic yards of limestone interlarded with granite, quartz, and flint, is on schedule in the hills of Putnam County for the relocation of U. S. 70N between Nashville and Knoxville. A Robbins rotary drill, mounted on an International TD-24 crawler, drills blast holes, as an International Payhauler loaded with shot rock heads for the fill area. This and 10 other Payhaulers average 11,000 cubic yards per day in a cut-and-fill operation.



Today's smallest two-way mobile radio - actual size!

New General Electric Transistorized Progress Line

General Electric's new Transistorized Progress Line will fit in more places, in more different positions, than any other two-way mobile radio you can buy today.

Not only is this the world's smallest, lightest commercial two-way mobile radio, but standby battery drain is so low you need never turn off your TPL mobile unit, just like the clock in your car. You install no special generator, use less gas, require fewer engine jobs.

TPL is the first two-way radio that transmits up to 75 watts of power in high band . . . the first that really fits under the dash . . . the first to realize the full benefits of transistorized design (no more than four tubes) . . . the first to eliminate bulky cables through new one-piece design of receiver control and transmitter . . . the first with shielded dirt-free ventilation.

The new General Electric TPL ushers in a new era of convenience and reliability in mobile communications. Don't miss all the exciting details. Write General Electric Company, Communication Products Department, Section 3099, Mountain View Road, Lynchburg, Virginia.

GENERAL ELECTRIC

Communication Products Department

For more facts, use Request Card at page 18 and circle No. 304

Working almost in the shadow of the old state capitol in Little Rock, Ark., a Bucyrus-Erie 22-B—its cab off for repair—buckets concrete from an International mounted Rex 7¾-yard mixer to the footing of a retaining wall inside a 25-foot-deep cofferdam. This protects the foundations of the old structure. The work is for a 4-lane highway to be located between the retaining wall and the railroad tracks.

Retaining w

Construction of a high retaining wall within a few steps of the shaky foundations of 123-year-old buildings is a tricky job. But by working on the high sections of wall within a cofferdam, men of Forsgren Bros., Fort Smith, Ark., handled the work successfully.

The wall runs close to the old state capitol and, in places, cuts as close as 5 feet to an outbuilding of the main structures, which are being used as

The cofferdam is within a few inches of the caretaker's building on the site. Here, the retaining wall is about 25 feet high. The man signaling the crane operator is standing on a 5-foot diaphragm wall that will hold sand backfill behind the 20-foot section of the retaining wall. Each section was built as a unit.

Inside the 25-foot-deep cofferdam, men tie vertical steel to the dowels sprouting from the 3-foot-thick footing. No struts were needed inside the 18.5 × 26-foot cofferdam, for the heavy 12-inch H-beam wales took all the load. This is the deepest cofferdam.

After a crane taps lightly with a 3,200-pound drop hammer to drive sheet piles 2 feet at a time, men with pneumatic spades and hand shovels dig another 2 feet under the sheeting before the careful driving is resumed. Note the 12-inch H-beam wales braced against the diaphragms of the completed sections of the retaining wall.

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"Working in semi-molten slag at temperatures up to 1800°F., an AMSCO 'MML' ALLOY dipper front lasted 528 days. That's 13 times more service life than we got from the type previously used . . .; which gave a maximum of only 40 days' service." AMSCO "MML" ALLOY is a special combination of austenitic manganese steel and molybdenum, specifically developed for applications involving excessive heating as well as severe abrasion.

User Reports:

"AMSCO SIMPLEX TOOTH GIVES 18 WEEKS EXTRA SERVICE"

"We're getting between 15 and 18 weeks extra service by using AMSCO Simplex dipper teeth", reports Mr. Fred Weber, Jr., Vice-President of Vigus Quarries, St. Louis, Missouri. "This gives us almost 4 times the service life we've been getting from standard teeth in our rugged limestone quarrying operation."

Mr. Weber also found that 2-part, reversible Simplex dipper teeth were so much easier and quicker to replace that his shovels were back on the job in no time.

...ilt by bridge pier methods

Construction, done next to 123-year-old buildings, makes room for 4-lane limited-access expressway

a historical museum. Nobody wanted to be responsible for putting any cracks in the walls.

To minimize the risk of endangering the buildings, the State Highway Commission designed a special kind of wall that had to be built in a very special way. The high sections of the wall, reaching up 20 to 25 feet, were built inside sheet-pile cofferdams, much the same as bridge piers.

In driving the sheet piles, crews had to take unusual precautions to keep from disturbing the ground. The piles were tapped down 2 feet at a time with a drop hammer. This was followed by 2 feet of hand excavation and gentle driving. It was a kid-glove operation all the way.

Each 20-foot section of the 431-foot-long wall was built and backfilled as a unit that was independent of the rest of the wall. Each section was designed with 5-foot diaphragm walls at its back so that the backfilling could be done.

The method proved successful; though there were times when superintendent Burnette and resident engineer Hampton looked anxiously up at the old buildings, no cracks appeared in the walls.

The retaining wall was built to make room for a 4-lane limited-access expressway bordering the Arkansas River in downtown Little Rock. La Harpe Boulevard, as the highway is named, is part of a comprehensive expressway system designed to speed the flow of traffic through Little Rock, across the Arkansas River, and into North Little Rock. Traffic on La Harpe Boulevard can use the newly built ramps to ease onto the Broadway and Main Street bridges. The boulevard will also tie in with the expressway bridge currently being built across the Arkansas River.

Under previous contracts, a .75-mile stretch of La Harpe Boulevard between Lincoln and Broadway has already been completed. Forsgren Bros. expects to complete the paving of a .5-mile section this spring. The $450,000 contract extends from Broadway to Cumberland Street at Markham.

Along this section, the new highway is squeezed between the big buildings of the city on one side and the edge of the river on the other. For the engineer, it was tight going all the way. Sometimes putting the road through was more like driving a tunnel than building a highway.

To clear the right-of-way, for instance, crews had to move a 4-story stone-block jail some 300 feet. A sizable chunk had to be cut out of a large parking garage that encroached on the highway. Actually, about 10 feet was sliced from the ground floor of the back of the building. The upper floors were allowed to overhang the shoulder of the road. A railroad had to be pushed closer to the river to make room for the highway. And one of the piers of an existing bridge had to be relocated. This was made possible by reconstruction of the two south approach spans.

Wall cuts close to buildings

Forsgren Bros. had its share of trouble building the retaining wall without shaking up the old state capitol. Three buildings had to be watched: the 2-story brick archives building, which was about 35 feet from the wall; the rear of the 2-story brick capitol, which had one corner 26 feet from the wall; and the 1-story caretaker's building, which was the closest at 5 feet. The main building had a partial basement, but little was known about its foundations.

The 431-foot-long wall cutting through the backyard of the capitol grounds varied in height from 8 to 25 feet. It was based on an offset spread footing, normally 3 feet thick. The higher sections of the reinforced-concrete wall varied in width from 28 inches at the base to 12 inches at the top. Each 20-foot length of the wall was designed with 5-foot diaphragm walls at right angles to the back. Drainage for the ground behind the wall was taken care of by a 6-inch perforated pipe running along the base of the wall.

In building the 20-foot sections of the wall, the contractor followed a leapfrog pattern. On the high part of the wall, cofferdams were driven

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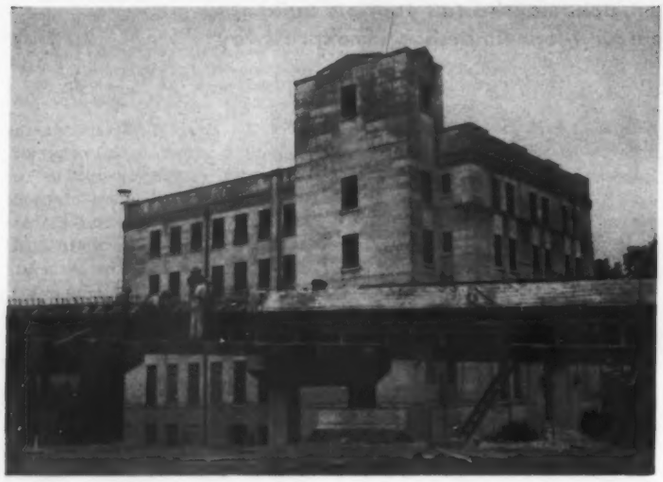

One of the tough jobs in clearing for the right-of-way involved moving this 4-story stone-block county jail some 300 feet to accommodate construction of the access ramp to the Broadway Bridge. Men, at this point, are forming the deck of the ramp.

around alternate sections. When these sections had been completed (including backfilling and pulling the cofferdam), the gaps were filled in. For filling in the gaps, only one wall of sheet piling was necessary. This back wall of sheeting was braced against the diaphragms of the completed sections.

To eliminate internal struts, the contractor braced the 18.5 × 26-foot cofferdams with heavy 12-inch H-beam wales. The deepest cofferdam went down about 25 feet.

Driving the sheeting with a 3,[illegible]-pound drop hammer proceeded slowly and according to spex. Drive 2 feet. Dig 2 feet. Excavation was slow, because much of the digging at the edges of the cofferdam had to be done with air spades and hand shovels.

After the heavily reinforced concrete footing was completed and the reinforcing steel set for the walls, forming was done with Universal form panels.

Short hauls for concrete

Ready-mix concrete for the job was supplied by Big Rock Stone & Material Co. The new Rex mixers, mounted on International trucks, made one of the shortest hauls in the company's history. The plant was located facing the wall, on the opposite side of the expressway.

The new Rex mixers were equipped with an electric-hydraulic system for controlling the position of the chute. Dyna-Chute speeded the pour and made life easier for the driver. The mixer was rotated by a power takeoff from the truck engine. The concrete bucket was swung from the transmix truck to the forms by a Bucyrus-Erie 22-B crane.

Particular care had to be taken in backfilling behind the wall. The diaphragm made it possible to backfill one section at a time. The sand backfill was compacted in 6-inch lifts by pneumatic tampers. When the work was completed, the sheeting was pulled.

Personnel

Keeping one eye on the contractor and another eye on the ancient walls of the old state capitol, resident engineer E. G. Hampton saw the tickling job through for the Arkansas highway department. He was assisted by R. B. Jones and D. L. Moore. J. T. Burnette superintended the difficult job for Forsgren Bros. THE END

Concrete-pavement design studied in HRB bulletin

■ Highway Research Board Bulletin 217, "Concrete Pavement Design Research, 1958," contains two papers.

The first paper, a 15-year report on an experimental concrete-pavement project in Oregon, deals with a portion of the Northeast Portland Secondary Highway paved in 1941, with facilities for measuring performance of expansion and contraction joints at various spacings, with or without load-transfer devices. The second paper, on performance of doweled joints under repetitive loading, describes a device and procedure for load-transfer tests of full-size joints under shear and flexure, and results of a series of tests to determine the effects of several variable factors.

Priced at $1, the bulletin is available from the HRB, 2101 Constitution Ave., Washington 25, D. C.

Morrison-Knudsen Company, Inc., employs M-R-S Model 250 Tractors and Model 250 HW 40 cu. yd., struck—50 yd. heaped—Scrapers on this dam project in Leesburg, Ala. Morrison-Knudsen recently purchased 4 of the R-1550 ROADRANGER-equipped M-R-S Tractor-Scrapers and a 5th Model 250 Tractor used primarily for powering compaction rollers—the company's 3rd purchase of M-R-S 250 combinations in a year. The recent purchase brings the total for the Leesburg job to *eight* M-R-S 250 Scraper combinations and two M-R-S 250 Compaction Tractors.

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This M-R-S Model 250 Tractor employs a 600 hp diesel engine and a semi-automatic 9-speed Fuller R-1550 ROADRANGER Transmission to pull an M-R-S 250 HW Scraper with a heaped capacity of *50 cubic yards.*

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For more facts, use Request Card at page 18 and circle No. 306

Edited by A. L. H. STREET
Attorney-at-Law

These brief extracts of court decisions may aid you. Local ordinances or state laws may alter conditions in your community. If in doubt, consult your own attorney.

Picketers claim damages

THE PROBLEM: *A contractor sued to enjoin picketing of a construction job by labor-union representatives. The trial judge granted a temporary injunction but later dismissed the suit on the ground that illegal picketing was not proved. The unionists applied for an award of damages against the contractor because of the temporary interference with the picketing but did not show that any tangible money loss was entailed. Were damages properly denied?*

THE ANSWER: Yes. (Tolbert v. Samuels, 317 S.W. 2d 715, decided by Arkansas Supreme Court.)

The court noted that one witness testified that the bargaining position of the labor unions was practically destroyed by their temporary inability to picket, but there was no evidence of any definite money loss. That damage of this kind may be hard to prove in dollars and cents does not justify an award based on guesswork. The burden was on the claimants to prove the amount of their damages. Claimants also sought reimbursement for the fees paid their attorneys to secure dissolution of the injunction. The Supreme Court said that reimbursement was properly denied.

Extras affected time limit for completion

THE PROBLEM: *A building contract called for $25 per day damages for delay in completion beyond 100 days. It also provided for extending the time for delays caused by inclement weather or acts of God. Considerable extra work was ordered by the owner and the job was not completed until 144 days had passed. In litigation between the parties, a trial judge allowed the owner $25 per day damages for 44 days without proof as to what was a reasonable time for doing the extra work. Was that erroneous?*

THE ANSWER: Yes. (Connell Construction Co. v. Phil Dor Plaza Corp., 210 S. W. 2d 311, decided by the Texas Supreme Court.)

The court decided: by merely complying with an owner's order for extra work a contractor does not impliedly undertake to complete the job, plus the extras, within the time fixed in the contract. But it would seem to be best, when extras require considerable time, that the contractor insist upon an understanding as to how much extra time for completion is to be allowed.

In this case, a provision in the contract for the contractor to apply for additional completion time was limited to delays caused by inclement weather, etc.

A new trial was ordered by the State Supreme Court, thereby making clear that no damages were allowable if the job was completed within 100 days, plus a reasonable time for doing the extra work.

Gravel land values

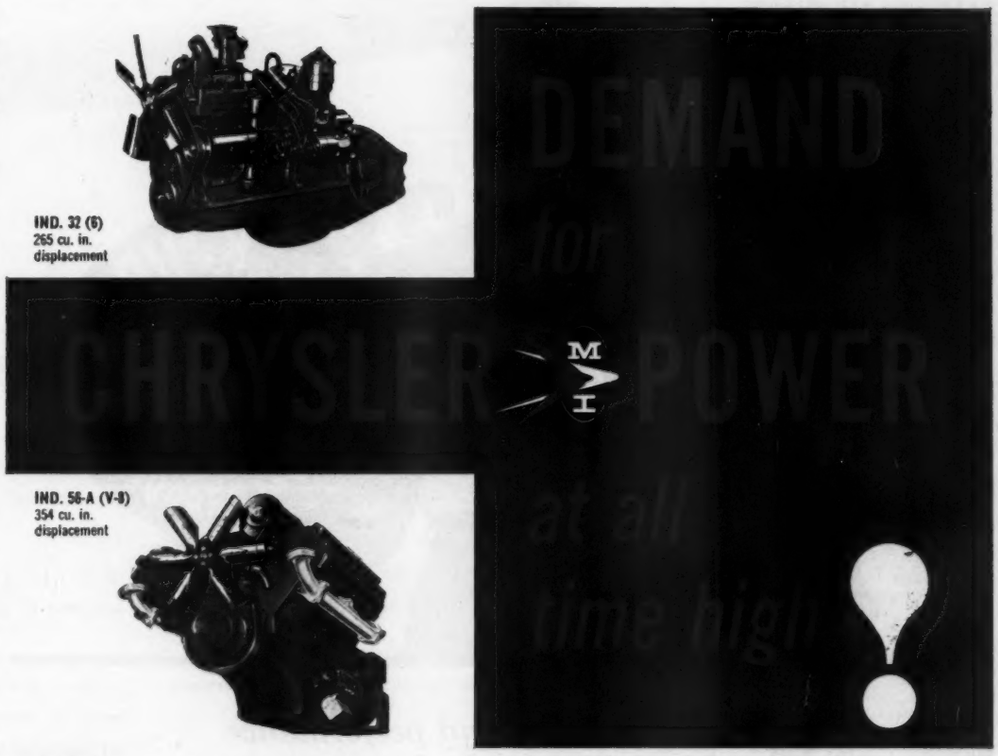
THE PROBLEM: *A city condemned gravel-bearing land for water-works use. In valuing the land, evidence was found that there was underlying gravel of excellent quality in a deposit extending in some places to a depth of 180 feet. In determining the valuation, there was a marked diversity between the opinions of experienced gravelmen, including mining engineers and geologists, and a lower valuation testified to by the city's witnesses whose knowledge was largely limited to general real estate valuations. The jurors accepted the testimony of the real estate men, without regard to the peculiar value of the land on account of the gravel deposits. Was the verdict delivered by the jury vulnerable?*

THE ANSWER: Yes. (City of Springfield v. Beals Industries, Inc., 155 N. E. 2d 501, decided by the Court of Appeals of Ohio, Clark County.)

Underground dangers

THE PROBLEM: *In a damage suit against a land-development company, the complaint alleged that plaintiff, a county employee, was using heavy excavating equipment on defendant's property to remove trees, roots, and stumps. The trees grew on a right-of-way owned by the county; the roots extended into defendant's adjoining property. On defendant's land, a blade on plaintiff's equipment struck a buried pipeline containing highly combustible fluids. In the resulting explosion, plaintiff was injured.*

He alleged that the cause of the injury was defendant's negligent failure to inform the county and its employees of the presence of the pipeline or of the dangerous substances it carried. The complaint further alleged that defendant and the county desired the trees, roots, and stumps



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avoid legal pitfalls

to be removed, and that several days before the accident defendant permitted the county and its employees to enter upon the land for that purpose. Did the complaint state facts which, if proved, would entitle plaintiff to damages?

THE ANSWER: Yes. (Smith v. Kern County Land Co. 331 Pac. 2d 645, decided by the California Supreme Court.)

The court said that a lower court had erroneously decided that the complaint did not state facts which, if proved, would make the landowner liable in damages.

Engineers' licenses

THE PROBLEM: *A civil engineer had taken some night school courses on a college level, but had never completed high school study nor belonged to any professional engineering society. He had made no creative contribution to any engineering committee or society, and was not shown to have had responsible charge of engineering work for five years. He was denied a civil engineer's license under the statutes of Utah. Was the director of the State Department of Registration justified in refusing to register this applicant?*

THE ANSWER: Yes. (Skelton v. Lees, 329 Pac. 2d 389, decided by the Utah Supreme Court.)

The court said that a 1955 statute granting "grandfather" rights to all engineers except civil, electrical, and mechanical engineers was not unjustly discriminatory, because it excepted from examination those in the fields of civil, electrical, and mechanical engineering previously registered and licensed.

Public contractors' bonds

THE PROBLEM: *A statute specified that every person furnishing material or labor as a subcontractor to any political subdivision of the state, where statutory bond has been executed, shall have right to sue on the bond in name of the political subdivision, if he has filed a verified notice of claim with the officer, board, bureau, or department awarding the contract, within 180 days after [illegible] date of the last item of work or [illegible] item of materials. No suit shall [illegible] brought until expiration of 120 [illegible] after the last item of work or [illegible] rials has been furnished, except [illegible] final settlement between the [illegible] board, bureau, or department of [illegible] nicipal corporation and the [illegible] contractor has been made prior to [illegible] piration of the 120-day period. [illegible] the 120-day period and the 180-day period start to run on the date of each claimant's last labor or material, rather than on date of the last labor or material furnished on the entire job?*

THE ANSWER: Yes. (Board of Education of Northfield Township High School District v. Pacific National Fire Insurance Co., 153 N. E. 2d 401, decided by the Illinois Appellate Court, First District.)

The court also decided that a statutory provision that no defect in the notice of subcontractor's claim for labor or material, properly filed, shall deprive subcontractor of the right to sue on the general contractor's bond, —unless it shall appear that such defect has prejudiced the rights of an interested party asserting rights— does not excuse failure to file timely notice.

Rights of sureties

THE PROBLEM: *A municipal sewer construction contract called for withholding of payments due the contractor as security for payment of labor and materials bills. The contractor defaulted in performing his contract, and the surety paid accrued labor and material bills. Did the surety have prior rights against the retained funds?*

THE ANSWER: Yes. (Philadelphia Industrial Corp. v. Upper Dublin Township of Pennsylvania, 169 Fed. Supp. 725, decided by the United States District Court, Eastern District, Pa.)

Non-union construction criminally damaged

THE PROBLEM: *A non-resident contractor used non-union labor in constructing a building. The business agent of a local carpenter's union warned the contractor that union men had "better be" employed. Two weeks later a large group of men appeared at the building, climbed upon scaffolding and forced off the men working there, removed the mixing tool from a workman at mortar box, and surrounded a truck which was delivering material. The workmen were warned that there would be trouble if any more work was done on the building. After the work had been forcibly stopped, appellants appeared at the premises.*

Two days later, appellants were among those who met with approximately 25 other men who were also connected with local labor unions. One appellant announced that [illegible]

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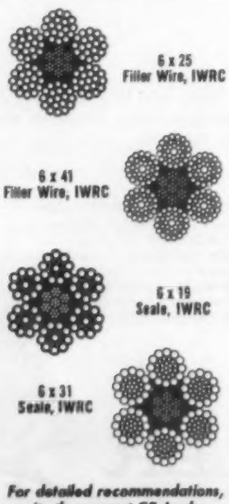

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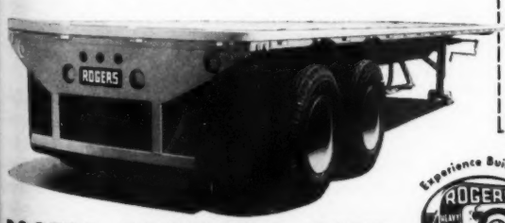

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Speeds construction of longest inland bridge in Texas with

GULF MAKES THINGS

Most bridges span rivers or canyons. But deep in the heart of Texas, the new Miller's Crossing Bridge is being built across a dry basin which will soon become a man-made lake covering a 57 square mile area.

The new lake and the bridge are part of the $20,000,000 Iron Bridge Dam and Reservoir being built for the city of Dallas and the Sabine River Authority. The reservoir will provide water for Dallas and Greenville. Also excellent recreational facilities.

The two-mile Miller's Crossing Bridge will be the longest inland bridge in Texas. Substructure and decking are being formed with concrete supplied by Wemix Company of Greenville, Texas, subcontractors to the builders of the bridge, Cage Brothers of San Antonio.

Gulf supplies Wemix with all fuels and lubricants used in their equipment. Construction of the bridge is running ahead of schedule—good evidence that Gulf makes things run better for Wemix and for the whole project as well.

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Shown here are, left to right, H. W. Inglish, Jr., Gulf Distributor at Greenville; H. D. Baker, Owner of Wemix; L. W. Kendrick, Gulf Assistant District Manager, Tyler District.

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Ruggedness of construction is evidenced in the 6" square solid steel drawbar, the box-type frame which weighs 160 lbs. per foot, the circle weight of 54 lbs. per foot, and the size of the tapered front wheel spindles which are 3¾" and 2½" diameter at the bearings. Unequaled front end stability is provided by the 16.00 x 24, 12-ply tires.

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Work records all over the country have proved this super grader has unmatched work capacity—the kind that's needed on the mammoth Federal highway construction program. The usual enthusiastic comment of contractors who are using the T-700 is that it does more than twice as much work as any other grader they have ever used.

For further information write The Galion Iron Works & Mfg. Company, Galion, Ohio, or any of their distributors.

● The gigantic 14' x 30" x 1" hydraulic shiftable moldboard moves the biggest and heaviest windrow of any grader. Maximum reach outside rear tires is 109".

● The torque converter drive, power-shift transmission, tail-shaft governor, and decelerator utilize with utmost efficiency the 220 hp from the Cummins diesel engine. The tremendous weight and power of the Galion T-700 is especially effective on bank-cutting work.

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purpose of the gathering was to "do a job" on the non-union construction, and that they were going to damage the foundation walls. He further stated that the non-union contractor had a nerve to construct a building near the home of the president of the Building Trades Council, and that they were going to teach the contractor a lesson. The group then obtained wrecking bars, and proceeded to the building at night. Appellants and the co-defendants were present and participated in damaging and destroying property. They destroyed cement and used a crowbar to punch holes in a wall. Other members of the group participated in the criminal acts.

Appellants and two other ringleaders were prosecuted and convicted on a charge of criminal conspiracy. On appeal, the attorney for appellants did not challenge the sufficiency of the evidence to show a conspiracy. But were they entitled to a new trial on the ground that the prosecuting attorney was guilty of misconduct, tending to prejudice appellants, in arguing the case to the jury?

THE ANSWER: No. (Commonwealth of Pennsylvania v. McHugh and Malloy, 145 Atl. 2d 896, decided by the Pennsylvania Superior Court.)

Defendants' attorney had argued that defendants, as officials of the unions, were trained to do things in a legal way without violence; that this was an issue of union against non-union labor; and that these defendants and their families suffered by reason of publicity and of anonymous telephone calls, and because their children did not want to attend school as a result thereof. The court said that this justified the district attorney, in reply argument, in stating that while unions have rights which the defendants could have exercised according to law, they preferred to gain their ends by force and violence. In so doing they rejected the law of the land and resorted to the "law of the jungle or other methods of a more primitive civilization."

Federal contract is ruled upon

THE PROBLEM: *A contractor for construction of federal facilities gave bond for prompt payment of all labor and material bills. The bond did not require that the surety be notified if bills were not promptly paid. A subcontractor extended the time for payment of bills owing by the prime contractor, taking notes for the amounts due. Did the subcontractor thereby waive right to hold the contractor's surety liable?*

THE ANSWER: No. (United States v. Rosyln Construction Co., 165 Fed. Supp. 133, decided by the United States District Court, District of Maine.)

The court said that the surety was liable for interest on the sums owing by the contractor after the dates when they should have been paid, but not the cost of discounting the notes received by the subcontractor from the contractor.

Computing excavation for payment purposes

THE PROBLEM: *An excavation contractor sued a state turnpike commission on two claims: (1) for overbreakage of rock excavation and (2) for excavation beyond design lines ordered by job engineers without approval of the project engineer.*

On the first point the contract provided: "The quantity of unclassified road excavation for which payment will be made will be the volume measured in its original position, computed by the average end area method from cross-sections taken before the removal of the material and from the neat excavation lines as shown on the plans, or as established by the engineer. Except that for rock in mass formation, the payment planes shall be six (6) inches below the template grade and the inner slope of roadway ditches, and one (1) foot outside and below the neat slope and bench lines respectively shown on the plans, thus providing the allowance for overbreakage." On the facts established at the trial, was the contractor entitled to collect on both claims?

THE ANSWER: Yes. (S. J. Groves & Sons Co. v. West Virginia Turnpike Commission, 164 Fed. Supp. 816, decided by the United States District Court, Southern District of West Virginia.)

On the first point, the court decided that the contractor was entitled to payment for removing all materials on areas of rock in mass formation not already paid for, whether excavated or not, extending to the outside of the 1 foot allowance line for overbreakage, less quantity of materials left in place and not excavated within the design line.

On the second point, the contract provided that no allowance should be made for excavation beyond slope lines shown on the plans unless authorized by the project engineer in writing. Without such authority, the contractor removed unsuitable materials on order by job engineers. This was outside the overbreakage area shown by the plans. The court decided that the contractor was not debarred from collecting, because the project engineer could not have justifiably refused to approve the order of the job engineers on the facts that were presented.

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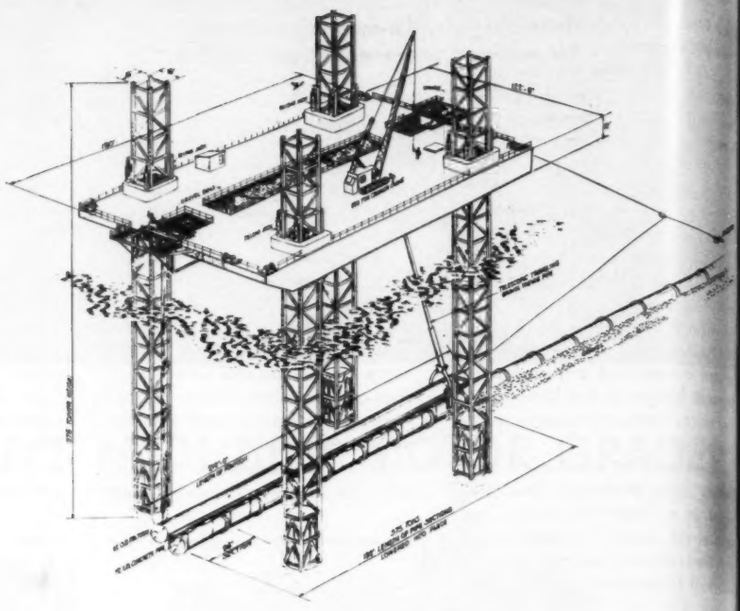

This sketch shows the complete concrete-pipe laying operation for the Los Angeles Hyperion Sewage-Treatment Plant. The offshore rig, George F. Ferris, has four 275-foot-high legs equipped with pontoons that provide footing on the ocean floor and lessen the weight of the legs when they are jacked up and the barge is afloat. A 14-foot-OD pontoon brings a 192-foot section of pipe under the hull, and both are sunk so that the pipe can be guided into place. Gravel from hoppers in the middle of the hull is brought by tremie to bed the pipe down. The pontoon is then raised, lines are released, and the offshore rig moves ahead.

Mobile offshore platform lays underwater pipeline

A fantastic rig that seems like a cross between a huge robot and a walking island is laying a line of 144-inch reinforced-concrete pipe that will extend five miles into the Pacific Ocean, in water nearly 200 feet deep, off El Segundo, Calif. The huge pipe, which will terminate in twin diffuser lines, is the ocean outfall for effluent disposal from Los Angeles' Hyperion Sewage-Treatment Plant.

Although the contract price of $20,297,530 definitely puts the project in the class of very large jobs, the use of the big mobile offshore platform makes it possible to do the work with a very small crew. Working two shifts, the general contractor, Hyperion Constructors, has a total crew of only 60 men, including supervisors. Of these, 45 are working at the laying site and 15 are at the assembly dock in Long Beach. A maximum of 35 additional workmen is employed by United Concrete Pipe Corp. in the manufacture and handling of the pipe. This is being done at a plant on the pier at Long Beach.

Hyperion Constructors is a joint venture of six well known construction firms sponsored by Raymond International, Inc. The other joint-venture partners are the DeLong Corp., New York, N. Y.; Healy-Tibbitts Construction Co., San Francisco; Peter Kiewit Sons' Co., Omaha; Macco Corp, Paramount, Calif.; and Tavares Construction Co., La Jolla, Calif. The work is being done for the city of Los Angeles through its Board of Public Works.

Self-elevating barge

Named the George F. Ferris, after the president of Raymond International, Inc., the big mobile platform is essentially a self-elevating barge with a deck full of special equipment. Wells in the four corners of the hull accommodate four 275-foot-high legs on which the barge can be jacked up high above the waves, even when working in 200 feet of water.

Each of the 17-foot-square legs consists of four very heavy columns made of 14-inch 426-pound wide-flange beams with flange plates nearly four inches thick. The columns are cross-braced with 14-inch H-sections.

Large pontoons in the bottom of the legs provide footing on the ocean floor and also serve to lessen the weight of the legs in the water. Each of the 25-story-high legs weighs 700 tons.

Three hydraulically operated horizontal pin jacks work in a series of notches in the flange plates of the legs to raise and lower the platform and the legs. A battery of 10 electrically powered Dennison pumps, located in a pump room below deck,

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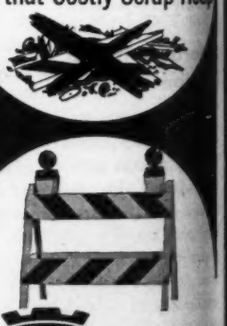

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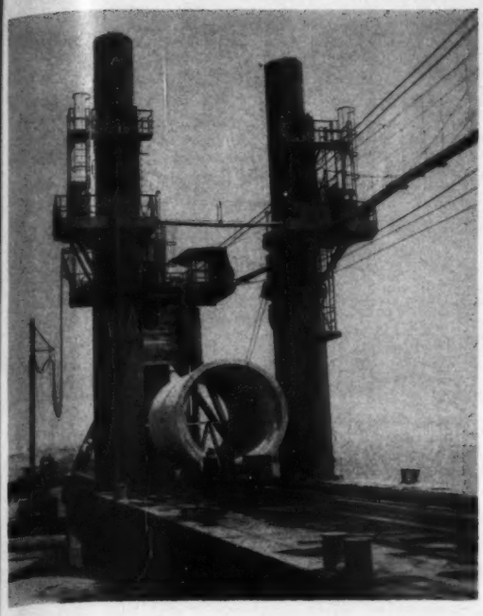
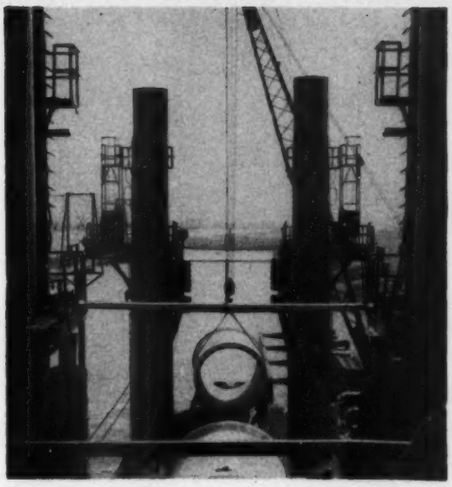


The first job for the general contractor is the assembly of a 192-foot section of line on a dry dock at Long Beach Harbor. This first section of the pipe has been pulled the full length of the rails and is in the anchor position.



A Manitowoc crane sets another length of pipe on the rail dollies at the end of the dry dock. As the joints are made, a hydrostatic test is applied between the two 1⅛-inch gaskets that seal them.

Walking island places 192-foot lengths of 144-inch pipe in water up to 200 feet deep

powers the 5,000-psi hydraulic system. Three Caterpillar D397 diesel generators, each rated at 350 kw, provide the electric power for the hydraulic pumps, as well as for lights, motors, and other uses aboard.

The 190×122.6-foot hull is 17 feet deep. Within it is a series of waterproof compartments for water, fuel, engine rooms, crew's quarters, etc. The outer compartments are reserved for sea-water ballast to keep the rig on an even keel when afloat. Through the middle of the hull is a series of gravel hoppers that are open on top and have gates at the bottom for discharging the gravel into the tremie system that takes it down to the pipe.

Deck equipment

Probably the most obvious piece of equipment on the deck of the Ferris is the Manitowoc 4500 crane. Using a Williams 5-yard clamshell bucket, this rig fills the gravel bins from supply barges, shifts the gravel from bin to bin as needed, and handles all other miscellaneous lifting jobs on deck.

The pipe and pontoon sections are lowered into place by two big bridge cranes mounted on outriggers that extend over the bow and stern of the platform. Each crane can be moved 12 feet longitudinally and 12 feet transversely by hydraulic rams. Each

(*Continued on next page*)

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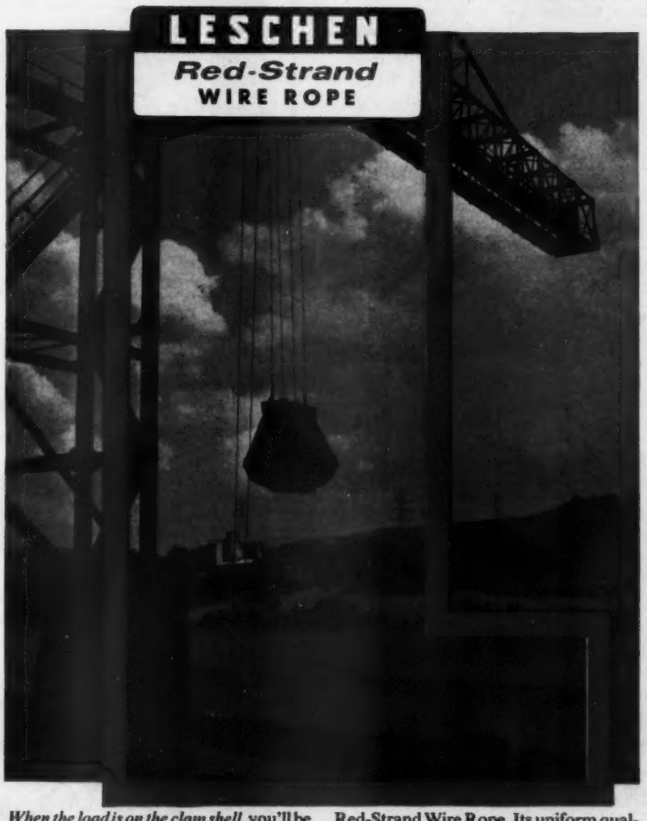

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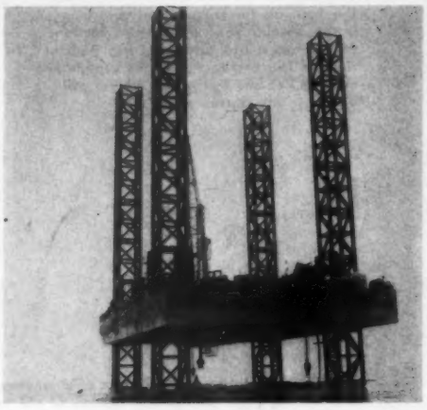
To move the assembled pipe, crews lowered the dry dock and floated the pontoon over the string. The dry dock was then raised, pipe lashed to the pontoon, and the dry dock lowered. Pontoon and pipe floated free.



After the pontoon brings the pipe under the hull of the laying barge, water is added to the pontoon's ballast tanks, and big winches take over the job of lowering pipe and pontoon to the bottom.

Two 4-drum Clyde winches handle the lines used to position the pontoon and the lines operating the gravel-placing tremie. GM diesel engines are used to power the winches.

(Continued from preceding page)

crane carries a Clyde 300-ton winch, with 36-inch drum and 51-inch face, reeved with 2,000 feet of 1½-inch Roebling Royal Blue cable. These lines are reeved through 30-inch-diameter 6-sheave McKissick blocks to produce 12-part lines.

Seven Clyde deck winches handle the six anchor lines used for positioning the platform when it is afloat and the line that pulls the pontoon into place under the platform. Each of these winches has a 36-inch drum and 51-inch face. They are powered by air provided by a battery of four Chicago Pneumatic 600-cfm skid-mounted compressors. The compressors also supply air for controlling the buoyancy of the pontoon.

The transverse positioning of the pontoon under the platform is done with four cables controlled by a Clyde 4-drum winch mounted amidships on the deck. Another similar winch at the same location moves the gravel hopper car that travels on rails under the platform. These winches are powered by GM diesel engines.

Assembling the pipe

The pipe-laying operation starts at Pier A in Long Beach Harbor, some 27 miles from the laying site. Here United Concrete Pipe Corp. has set up a plant to produce the huge 24-foot sections of pipe and deliver them to the contractor's dry dock at the water's edge. (See "Gigantic Crane Handles Heavy Concrete Pipe," page 68.)

Beside the pier, Hyperion Constructors has set up a DeLong self-elevating dry dock on which eight of the 24-foot pipes are assembled into a string and suspended from the pontoon that carries them to the laying rig.

The DeLong dry dock consists of a bargelike platform 210 feet long and 36 feet wide, carried on four cylindrical legs that are 7 feet in diameter. Hydraulic pin jacks, similar to those on the legs of the George F. Ferris, raise and lower the platform between the harbor floor, nearly 40 feet under water, and the level of the dock.

A pair of rails running the length of the dry-dock deck carries 4-wheel steel dollies on which the individual pipe sections are cradled. A Manitowoc 4500 crane sets the pipe sec-

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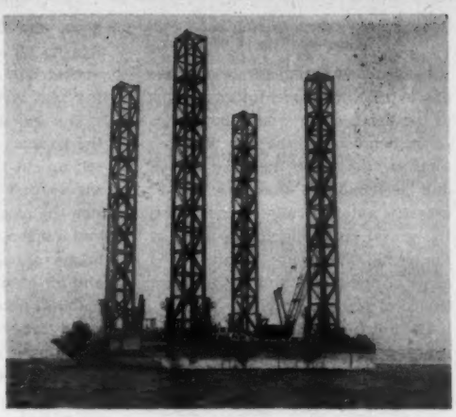
After a length of pipe has been positioned and the joint closed, gravel is fed through a tremie to bed the pipe on the bottom. As the gravel is placed, a Manitowoc 4500 with Williams 5-yard clamshell transfers the material from bin to bin, as necessary, to maintain the supply. The crane refills bins from supply barges.

When the pipe section has been laid and the pontoon is on its way back to Long Beach, the legs of the George F. Ferris are jacked up until the hull is afloat. The rig then moves ahead and anchors to the next position, 192 feet ahead on the pipe center line. ►



tions on the dollies, and a Skagit winch pulls them down the rails into position for assembling.

Two 1⅛-inch round rubber rings are then stretched into place in the grooves in the spigot of the pipe, and both bell and spigot are lubricated. The winch pulls the two sections together to make the joint.

Water is applied under pressure between the two gaskets to test the joint.

Pontoon is attached

When eight sections have been joined together into the 192-foot string, the dry dock is jacked down to the bottom of the harbor so that the pipe is submerged. The 212-foot-long pontoon is towed into place over the pipe, and the dry dock jacks itself back up to the surface, raising both the pontoon and the pipe out of the water. The pipe is securely lashed to the pontoon with cables that are attached to a hydraulically operated quick-disconnect device.

Again the dry dock lowers itself to the bottom, and the pontoon with its 680-ton load of pipe is floated out. A powerful tug hooks on and tows the load some 27 miles to the laying rig.

At the laying site, the pontoon is towed into place under the George F. Ferris, and the lifting and guide lines from the several winches are attached and the tow lines released. Lines for the hydraulic and pneumatic operations of the pontoon are also attached.

Water is introduced into the pontoon to reduce its buoyancy, starting the pontoon and its load of pipe on the way to the bottom. Martin Decker weight indicators on the main load lines give a continuous reading of the weight, making it possible to regulate the buoyancy of the pontoon to apply the desired weight to the bridge-crane lines.

When the pipe reaches a position just off the bottom, the cranes hold it suspended. Guided by a diver using a telephone line on the bottom, the bridge-crane operators maneuver the big load precisely into position to make the joint. The final pull that closes the joint comes from the inshore haul line through one of the deck winches.

While the pipe is held suspended from the bridge cranes, the gravel backfill is placed under and around

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(Continued from preceding page)

it by means of a tremie that leads the gravel from the hopper under the bins of the Ferris down around both sides of the pontoon and the pipe. The bottoms of the tremie lines are shaped and positioned so that the flow of gravel is automatically stopped when the gravel builds up to the ends of the tremie. The tremie is then pulled along on the pontoon until the entire length of pipe is bedded.

The quick-disconnect device on the pontoon is then actuated to release all of the cables tying the pontoon and pipe together. The pontoon is raised to the surface, and air is blown into it.

As soon as the pontoon has been towed away, the Ferris jacks itself down into the water and raises its legs up off of the bottom. Using its anchor lines, it moves itself ahead to the next laying position.

The legs are jacked back down to the bottom, and the barge raises itself up out of the water and clear of the waves, ready to repeat the operation the next day. During the moving and resetting operations, a service tug brings a barge of gravel alongside, and the Manitowoc 4500 transfers the material from the barge to the bins of the Ferris. The complete cycle requires most of a 24-hour day, and if weather permits and other factors are favorable, the rig places one of the 192-foot strings per day.

Divers serve to direct both the positioning and joining of the pipe. City divers inspect the inside and outside of the pipe and assist in the pressure test of the laying joint. Underwater TV is used for watching the makeup of the laying joint.

Onshore and near-shore portions of the work were done previously by different methods. A portion of the onshore work was a tricky tunneling job in beach sand. The near-shore work through the surf was done from a trestle using a gantry crane.

Personnel

The project is being managed for Hyperion Constructors by Arthur Fertell, with the offshore work under the supervision of George Bauer. The onshore portion was supervised by Jack Christensen, and Long Beach operations are supervised by Pete Christiansen.

Inspection of the project for the city of Los Angeles is supervised by W. T. Anderson, inspector of public works, with W. R. Albriton serving as principal construction inspector-engineer and J. H. "Hank" Holmes as senior project inspector. Lyall Parker is city engineer, and Rear Adm. Cushing Phillips, CEC, USN (ret.), is president of the Los Angeles Board of Public Works.

The project was designed by a joint venture of Los Angeles consulting engineering firms known as Hyperion Engineers. This is composed of Holmes & Narver; Daniel, Mann, Johnson & Mendenhall; and Koebig & Koebig. David L. Narver, Jr., is serving as project manager and David R. Miller as project engineer for Hyperion Engineers. THE END

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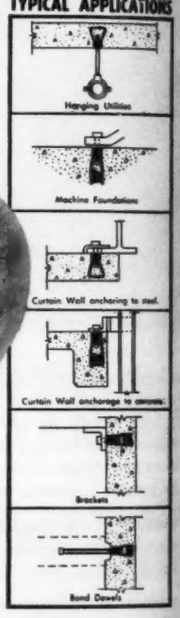
Richmond Concrete Inserts
SPEED THE JOB...
Safely and Economically

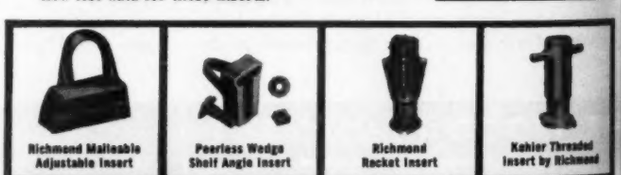
Fastening to concrete made safe and easy by their versatility and strength

TYPICAL APPLICATIONS



New Richmond Structural Concrete Inserts

a recent addition, these inserts are prefabricated from a special design which distributes the bolt stresses into the concrete for greater strength than any previously known device. Laboratory tests show these inserts to have ultimate strengths far in excess to their actual, recommended working loads. This strength performance permits designers to develop the full working strength of bolted connections with more than adequate safety factors. The Richmond Bulletin on Structural Concrete Inserts contains certified test data for these inserts.


Richmond Malleable Adjustable Insert
Peerless Wedge Shelf Angle Insert
Richmond Rocket Insert
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The variety of types and sizes of Richmond's Concrete Inserts gives you the added assurance of always having the right tool for any hanging or anchoring job. These prdducts are laboratory tested and you can rely on their recommended working loads. They are provided with either holes or lugs which makes nailing them to the forms a simple, speedy operation with no need for drilling of decking or sheething.

Send for your free copies of this bulletin and the current Richmond Handbook which give you complete data on types, sizes, working loads and the varied uses of these inserts . . . and also show the full line of more than 400 Richmond-engineered Tying Devices, Anchorages and Accessories for the concrete construction industry—write to:

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Convention calendar

September 17-18 Engineering Management Conference
Seventh Annual Conference, Statler Hilton Hotel, Los Angeles, Calif. American Society of Mechanical Engineers, 29 W. 39th St., New York 18, N. Y.

September 20-23 American Public Works Association
Meeting, Olympic Hotel, Seattle, Wash. Robert D. Bugher, executive director, APWA, 1313 E. 60th St., Chicago 37, Ill.

September 21-25 International Council for Building Research, Studies, and Documentation
International Congress, Rotterdam, The Netherlands. The Congress Secretariat, ICBRSD, c/o Bouwcentrum, Postbox 299, Rotterdam, The Netherlands.

September 21-26 International Road Congress
Eleventh World Meeting of Permanent International Association of Road Congresses and Road Show, Copacabana Palace Hotel, Rio de Janeiro, Brazil. Eng. Luiz de Mattos, general secretary, IRC, Avenida Presidente Vargas, 522, 13.0 andar, Rio de Janeiro, Brazil.

September 24-26 New York State County Highway Superintendents Association
Summer Meeting, Lake Placid Club, Lake Placid, N. Y. Harry R. Mason, secretary, NYSCHSA, Fonda, N. Y.

September 28-October 1 American Welding Society
Fall Meeting, Sheraton-Cadillac Hotel, Detroit, Mich. AWS, 33 W. 39th St., New York 18, N. Y.

September 29-October 1 National Association of Corrosion Engineers
Western Region Conference, Bakersfield Inn, Bakersfield, Calif. T. J. Hull, executive secretary, NACE, 1061 M & M Bldg., Houston 2, Texas.

September 30-October 2 Producers Council, Inc.
Meeting, Chase Park Plaza, St. Louis, Mo. PCI, 2029 K St. N. W., Washington 6, D. C.

October 1-2 Wire Reinforcement Institute
Fall Meeting, Queen Elizabeth Hotel, Montreal, Que., Canada. Frank B. Brown, managing director, WRI, 1049 National Press Bldg., Washington 4, D. C.

October 5-8 National Association of Corrosion Engineers
Northeast Region Conference, Lord Baltimore Hotel, Baltimore, Md. T. J. Hull, executive secretary, NACE, 1061 M & M Bldg., Houston 2, Texas.

October 6-9 Ohio Short Course on Roadside Development
Course, State Office Bldg. and Ohio Union of Ohio State University, Columbus, Ohio. Wilbur J. Garmhausen, Chief Landscape Architect, Ohio Department of Highways, State Office Bldg., Columbus 15, Ohio.

October 11-16 American Association of State Highway Officials
Meeting, Statler-Hilton Hotel, Boston, Mass. A. E. Johnson, executive secretary, AASHO, 917 National Press Bldg., Washington 4, D. C.

October 11-16 American Society for Testing Materials
Third Pacific Area National Meeting, Sheraton-Palace Hotel, San Francisco, Calif. ASTM, 1916 Race St., Philadelphia 3, Pa.

October 19-22 American Bridge, Tunnel and Turnpike Association
Meeting, Hotel Muehlebach, Kansas City, Mo. John Allyn Stearns, executive secretary, ABTTA, Northcourt Bldg., White Plains, N. Y.

October 19-23 American Society of Civil Engineers
Annual Convention, Hotel Statler, Washington, D. C. Don P. Reynolds, assistant to the secretary, ASCE, 33 W. 39th St., New York 18, N. Y.

October 20-22 National Association of Corrosion Engineers
North Central Region Conference, Cleveland, Ohio. T. J. Hull, executive secretary, NACE, 1061 M & M Bldg., Houston 2, Texas.

October 25-28 National Lubricating Grease Institute
Meeting, Roosevelt Hotel, New Orleans, La. T. W. H. Miller, general manager, NLGI, 4638 J. C. Nichols Parkway, Kansas City 12, Mo.

October 26-28 National Highway Conference for County Engineers and Officials
Seventh Annual Conference, Leamington Hotel, Minneapolis, Minn., sponsored by the County and Local Roads Division of the American Road Builders' Association. ARBA, World Center Bldg., Washington 6, D. C.

October 29-30 National Slag Association
Forty-second Annual Meeting, Boca Raton Hotel and Club, Boca Raton, Fla. E. W. Bauman, managing director, NSA, 613 Perpetual Bldg., Washington 4, D. C.

November 2-6 Prestressed Concrete Institute
Fifth Annual Convention, Deauville Hotel, Miami Beach, Fla. Martin P. Korn, executive secretary, PCI, 425 N. E. Fifth St., Boca Raton, Fla.

November 2-5 American Concrete Institute
Twelfth Regional Meeting, Continental Hilton and Del Prado Hotels, Mexico City, Mexico. William A. Maples, secretary-treasurer, ACI, P. O. Box 4754, Detroit 19, Mich.

November 5-6 American Concrete Pressure Pipe Association
Meeting, The Fairmont, San Francisco, Calif. Mrs. Marjorie L. Congleton, secretary to the managing director, ACPPA, 228 N. LaSalle St., Chicago 1, Ill.

November 16-20 Corrosion Short Course
Fourth Annual General Florida Conference, Key Biscayne Hotel, Miami, Fla., sponsored by the Miami Section of the National Association of Corrosion Engineers. T. J. Hull, executive secretary, CSC, 1061 M & M Bldg, Houston 2, Texas.

November 23-25 Southeastern Association of State Highway Officials
Meeting, Eden Roc Hotel, Miami Beach, Fla. Ralph Davis, secretary, SASHO, Florida State Road Department, Holland Bldg., Tallahassee, Fla.

November 30-December 3 American Institute of Steel Construction
Annual Meeting, Boca Raton Club, Boca Raton, Fla. L. A. Post, executive vice president, AISC, 101 Park Ave., New York 17, N. Y.

HRB report discusses foundation exploration

■ Special Report 44, "Foundation Exploration," is available for 80 cents from the Highway Research Board, 2101 Constitution Ave., Washington 25, D. C.

Topics covered are soil formation and identification; exploration aims; reconnaissance; geophysics; borings; sampling; field tests; logging; and program. A list of references concludes the bulletin. Diagrams and tables supplement the written data.

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Parsons 310 Trenchliner digs trenches up to 19' deep, 2' to 6' wide, at capacities up to 4 cu. yds. a minute—uses DIAMOND Roller Chain for dependable power transmission.

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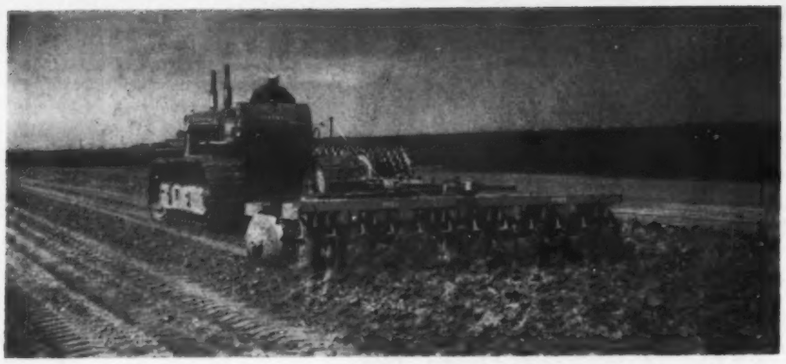

As two pairs of Gebhard sheepsfoot rollers make the first pass to compact an 8-inch-deep loose lift for the runway at Amarillo Air Force Base, Texas, a TD-24 pulls a Rome 30-inch double disk to keep the surface of the lift open so that rollers can get full penetration.

Thin lifts and plenty of scarifying help . . .

Compact grade for air-base runway

Compaction and finishing of the grading sections for the heavy-duty runway, taxiways, and aprons being built at Amarillo Air Force Base, Texas, were efficiently handled by a specialized spread of equipment. Maintaining optimum moisture in the soil and keeping the surface open were among the problems caused by the tricky Panhandle soil conditions.

The $12.55 million contract for the construction of a new 300 × 13,500-foot concrete runway, together with taxiways and aprons, was awarded by the Tulsa District of the Corps of Engineers to a joint venture of T. L. James & Co., Inc., Ruston, La., and W. R. Aldrich & Co., Alexandria, La. James and Aldrich sublet the earthwork to Terra Construction Co., Great Bend, Kans.

To handle the more than 4 million cubic yards of earthwork, base, and filter courses, Terra used several spreads of loading and hauling equipment. One of these had a Sierra loader pulled by an International TD-24 tractor, with six Euclid bottom-dumps doing the hauling. Another spread included eight International 2T-75 Payscrapers, with three TD-24 push-tractors that frequently worked in tandem. Terra subbed a part of the work to Glen Burgess, Tulsa, Okla., which used Caterpillar and Euclid rubber-tire scrapers.

In the heavy fine-grained soil, it was unusually difficult to get compaction in depth. Under ordinary operating conditions, the material would quickly tighten up on the surface of a lift, leaving the lower portion not up to the required minimum of 95 per cent density. The contractor found the solution in thin lifts and constant scarifying during the watering and compaction stages.

With the aid of dozers, the haul equipment laid down the soil in 8-inch-deep loose lifts. Water was added by two 2T-75 water wagons, each with a capacity of 5,400 gallons, to bring the moisture content up to optimum. Three sets of Grace and Gebhard heavy sheepsfoot rollers, pulled by TD-24 and TD-18 tractors, immediately started the compaction. As soon as they made their first pass, they were followed by a pair of TD-24 tractors pulling Rome 30-inch double-disk plows. These big disks helped mix the water into the soil and kept the surface of the lift open

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A **ONE BIG REASON IS SOLID OUTRIGGER STABILITY**

Four patented hydraulic outriggers are the keys to the amazing lifting capacity and stability of the Bucyrus-Erie 12-ton Hydrocrane.

These four legs of steel extend — both outward and downward — and set in seconds at the touch of a lever, leveling the crane hydraulically . . . even on rough, uneven ground. They give you big-machine stability for heavy lifts, small-machine compactness for close-quarter work, extra leverage for big over-the-side lifts.

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Over 50% of Hydrocranes sold last year were repeat sales

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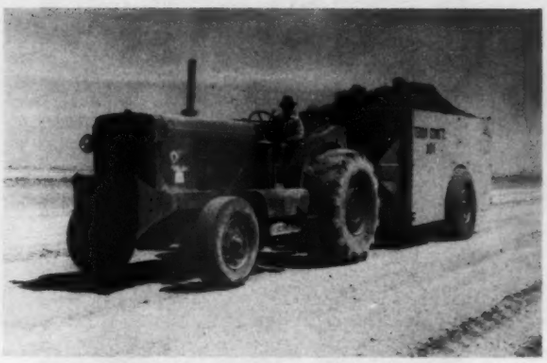
After the surface has been scarified, an International 2T-75 water wagon applies moisture. At right, a Galion T-500 motor grader shapes the lift.



The bladed surface is given a final rolling by a Grace 50-ton rubber-tire roller pulled by an MRS 190 tractor.

so that the sheepsfoot rollers could get full penetration.

When the sheepsfoot rollers had worked their way up, the surface was bladed to grade by Galion T-500 and T-600 motor graders. The final rolling was done by two Grace 50-ton rubber-tire rollers pulled by MRS 190 tractors. Each lift was again scarified lightly to provide bond with the succeeding lift.

In this rather arid part of Texas, water is scarce. The contractor rented one existing well and drilled another, which he equipped with a 6-inch vertical turbine pump powered by an International butane-burning engine. The well pumps delivered the water to ground tanks from which it was transferred by Jaeger and Berkeley 6-inch pumps to the water wagons.

During a part of the operation, Terra worked a night shift on the earthwork, illuminating the work areas with banks of floodlights powered by five Ready Power 5-kw light plants.

For lubricating the earthmoving spread, the contractor used a Graco lube truck. A separate 110-volt generator driven by the truck engine provided electric power for the lights and motors of the rig.

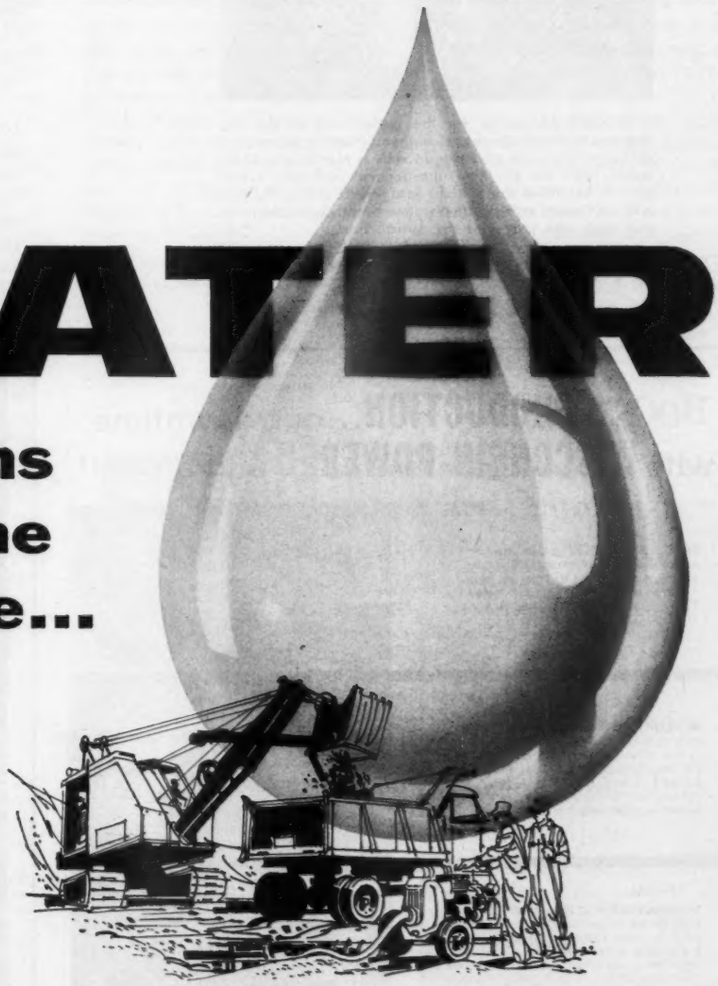
While the subcontractor was getting the earthwork well along, James and Aldrich set up the big batch plant, which is producing concrete batches for the paving spread. Aggregate supplies were developed in several pits, with an elaborate crushing and washing plant at the batch-plant site to produce the finished material. Some of the coarse aggregate is provided from a commercial quarry source.

Although the grading was substantially finished and the paving under way in the summer of 1958, the work could not be completed until a section of Rock Island Railroad track was relocated. This work was done under a separate contract.

The grading was supervised by superintendent Ralph Weller, one of the owners of Terra Construction Co. His embankment superintendent was Dee Otterman; excavation superintendent was W. H. Vockrodt. W. S. Jeffery is project manager for the James-Aldrich joint venture. R. D. Patterson is resident engineer for the Tulsa District of the Corps of Engineers.

THE END

when
WATER
threatens
your time
schedule...



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You'll bail as much as 90,000 gallons an hour with Barnes *self-priming* centrifugal pumps. Handle semi-solid seepage more swiftly, too, using Barnes heavy duty diaphragm pumps. Wide selection. Rugged construction. Many designed for low cost job-to-job portability. Be sure to get a free copy of our new Construction Pump Selector No. 238. It helps you match up the right Barnes pumps with any liquid-handling problem you meet!

Specify Barnes Blue Ribbon Quality
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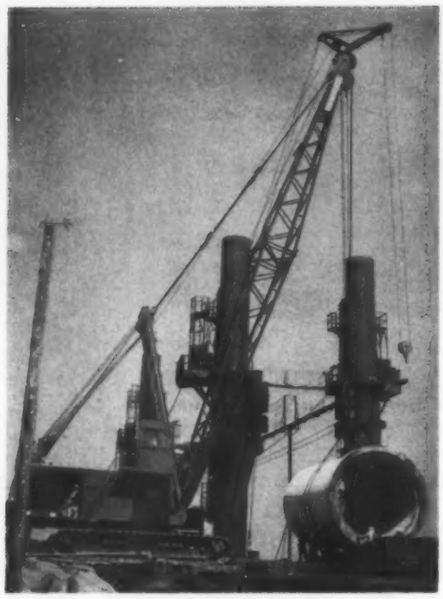


A 90-ton pipe section for the outfall line of the Los Angeles Hyperion Sewage Treatment Plant is set on two dollies on the deck of a dry dock by a Manitowoc 4500 crane. From this point on, the general contractor takes over to assemble the sections into 192-foot lengths that will be floated into position under an offshore platform and sunk into place for the outfall line.

Gigantic crane handles heavy concrete pipe

Making, storing, and handling 1,000 of what are believed to be the heaviest reinforced-concrete pipe sections ever built are the essential elements of a $5 million subcontract awarded by Hyperion Constructors to United Concrete Pipe Corp., Baldwin Park, Calif. The 144-inch-diameter 24-foot-long pipe sections, which weigh close to 90 tons each, are being laid on the bottom of the Pacific Ocean to build the 5-mile-long effluent outfall for Los Angeles' Hyperion Sewage-Treatment Plant. (See "Mobile Offshore Platform Lays Underwater Pipeline," page 80.)

On a 12-acre site on Pier A in the Long Beach, Calif., harbor, United set up a plant designed to produce eight of the huge pipes per day. They also developed a huge rubber-tire crane for lifting and tipping the pipes and delivering them to the general contractor's DeLong self-elevating dry dock at the pier side.

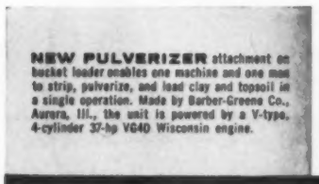
The gigantic lifting and carrying device, which dwarfs its operators and the Caterpillar D8 tractor that tows it, has a lifting capacity of 120 tons and a gross weight of 230 tons. It is mounted on 12 special Goodrich 14:00×24 tires, which provide flotation and permit the rig to carry the heavy pipe over the compacted sand of the storage yard.

Lifts with hydraulic cylinder

The rig has a tread of 24 feet 10 inches between the centers of the rear wheels. It is 32½ feet long and 40 feet high, over all. On the operating platform at the top is the hydraulic lifting device, which consists of a 12-inch-diameter hydraulic cylinder with a stroke of 8 feet. A Vickers pump driven by a Ford 6-cylinder industrial engine powers the 2,000-psi hydraulic system.

One of the important tasks for this lifter-tipper is that of turning all of

BOOST PRODUCTION...cut downtime with WISCONSIN-POWERED equipment!



NEW PULVERIZER attachment on bucket loader enables one machine and one man to strip, pulverize, and load clay and topsoil in a single operation. Made by Barber-Greene Co., Aurora, Ill., the unit is powered by a V-type, 4-cylinder 37-hp VG4D Wisconsin engine.

BITUMINOUS DISTRIBUTOR, made by Municipal Supply Co., South Bend, Ind., is said to spread over 18,000 gallons of material per day. Power for this gruelling, extremely hot work is supplied by a 37-hp Wisconsin 4-cylinder VG4D air-cooled engine which is completely enclosed, away from oil spray.

VIBRATORY COMPACTOR, made by the Seaman-Gunnison Corp., Milwaukee, Wis., packs a 12-ton wallop for compacting a wide range of soils and granular materials to rigid highway and airport density specifications. Powered by an 18-hp THD 2-cylinder Wisconsin engine, unit can also be used as a static roller.

You pay for workhours — not manhours — when you use Wisconsin-powered equipment on your construction jobs. That's because Wisconsin engines minimize power shutdowns — keep men and machines busy around the clock, regardless of weather.

Wisconsin engines outwork and outlast other engines of their type and size. They start fast — deliver steady load-lugging power that shrugs off the effects of sudden shock loads.

Air-cooling cuts engine size and weight — eliminates up to 26 wear parts used on water-cooled engines. You don't have to worry about summer dry-ups or winter freeze-ups, anti-freeze, fan belts, clogged radiators, etc.

Leading builders include Wisconsin heavy-duty, air-cooled engines on their mechanized equipment by choice — not by chance. For the many dollars-and-sense benefits, specify Wisconsin engines on the equipment you buy. Sizes from 3 to 56 hp. All models can be equipped with electric starting. Write for Bulletin S-237.

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World's Largest Builders of Heavy-Duty Air-Cooled Engines

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Gar-Bro (patented) self-closing gates discharge vertically. Are non-jamming and grout tight.

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...have many advantages

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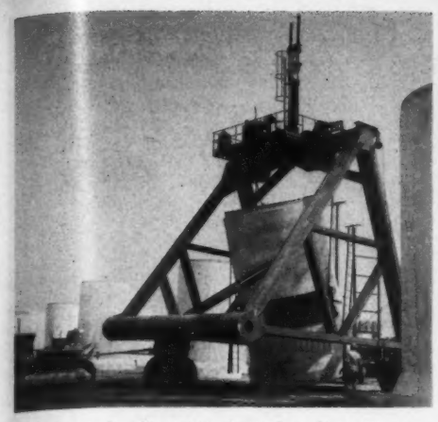

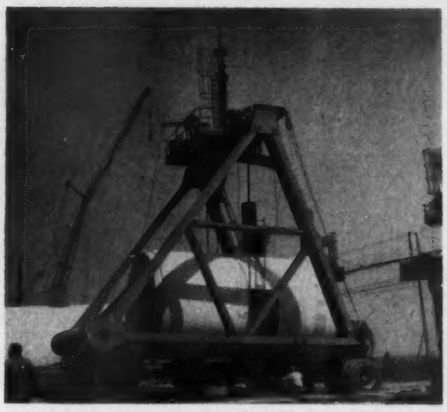

This huge rig handles 144-inch reinforced-concrete pipe sections at the Long Beach yard of the fabricator. Here the rig tips a section to the horizontal so that it can be placed on a cradle and made ready to be incorporated into a 192-foot-long string. A cable is slacked off so that the section tilts until it reaches the balance point. The big crane rides on 12 Goodrich 14:00×24 special heavy-duty tires. The 12-inch hydraulic cylinder at the top has a stroke of 8 feet and operates on a 2,000-psi system powered by a Ford 6 industrial engine driving a Vickers hydraulic pump. A D8 tows the rig, which has a lifting capacity of 130 tons and a gross weight of 230 tons.

the pipes from the vertical to the horizontal position just before they are assembled on the dry dock. The pipes are cast, cured, and stored in a vertical position. The crane carries them from the casting yard to storage areas, and then to dockside, in the upright position. It then tips them to the horizontal so that they can be placed on a cradle ready for assembling on the dry dock.

To pick up and handle the pipes, the crew uses a special bridle. This consists of a 3-foot-wide steel band, which fits halfway around the pipe, and a 2-inch cable, which wraps around the other half of the pipe, engages the ends of the steel band, and extends up to the lifting cylinder.

When a pipe is to be handled vertically, the band is attached above the center of gravity of the pipe. It then hangs in a vertical position as it is raised off the ground. When the pipe is to be tipped, the bridle is attached at the balance point and a light control cable is attached to the lower lip. As the pipe is raised off the ground, the control cable is slacked off and the pipe tips to the horizontal. Here it balances, suspended in the bridle.

The D8 backs the crane over a stationary cradle set up near the dry dock, and the pipe is lowered onto the cradle in the horizontal position. The bridle is then detached, and the crane moves away.

At this point a Manitowoc Model 4500 crane takes over the job of handling the pipe. The big crane, with 87 feet of boom, can handle the 90-ton load 37 feet out from the center pin over the end of the tracks and 31 feet out at 90 degrees.

It picks the pipe off the cradle, swings around 180 degrees, walks out on a bridge at the edge of the pier, and sets the pipe on a rail car on the DeLong dry dock. Here the general contractor undertakes the assembly of the pipe into 192-foot units, which are suspended from a pontoon and

SYNTRON

100% Self-Contained

GASOLINE HAMMER

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Completely portable one-man drilling outfit

SYNTRON Gasoline Hammer Rock Drills drill, test and blast holes fast and easy. They are 100% self-contained—extremely portable, easily transported in car trunk, jeep or pole sling—need no auxiliary equipment. They are dependable winter or summer. Start easily and quickly in temperatures from 110° F. to – 65° F.

SYNTRON Rock Drills feature automatic rotation of drill bit. Drill to a depth of 20 feet at the rate of two feet per minute. Blow dust and cuttings out of drill hole.

SYNTRON Gasoline Hammer Rock Drills are efficient, economical and dependable. Ideal for exploratory work—working in rough terrain—drilling for blasting large boulders and rock fragments too large for a shovel to scoop—and many other jobs.

Also available are SYNTRON Gasoline Hammer Paving Breakers for busting, digging, tamping, etc.

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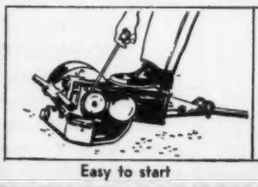
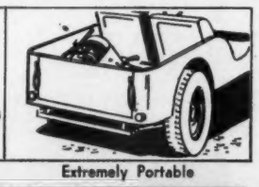


Easy to start



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Unique s… tion prov… filtering …

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For more facts, use Request Card at page 18 and circle No. 326

Reinforcing cages have been set around the inner jackets on two of the forms; the center form has the outer jacket and Viber pneumatic vibrators in place. The Noble plant has twin Worthington 3-yard mixers.

An American 830 locomotive crane swings the Gar-Bro 6-yard bucket in a circular pattern over a pouring cone that covers the inner shell. Concrete hitting the cone is deflected into the pipe form.

These two Chicago Pneumatic 600-cfm compressors supply air for the vibrators and the cement plant. The Dixon boiler at right supplies steam for curing the pipe. Curing takes 36 hours.

(*Continued from preceding page*)

towed to the work site.

When United Concrete Pipe Co. took on the job of making these pipes, its first operation was to set up a concrete plant and casting yard on the 12-acre site on Pier A, which was leased from the Long Beach Port Authority.

A Noble batch plant was set up on a high tower to accommodate two Worthington 3-yard center-dump drum-type mixers. Aggregates, delivered by truck, are brought to the 240-ton bins of the plant by inclined conveyor. Victor Type II cement, also delivered by truck, is raised to the high 600-barrel cement silo by a Noble vertical bucket conveyor. The semi-automatic batching plant discharges 3-yard batches directly into the Worthington mixers.

At the completion of the mixing period, the concrete flows directly into a Gar-Bro 6-yard bucket with air-operated gates. An American Model 830 locomotive crane carries the bucket to the form and swings it in a circular pattern over the pouring cone on top of the form. A workman, riding in a cage on the side of the bucket, operates the air gates to deposit the mix around the form as the bucket is swinging.

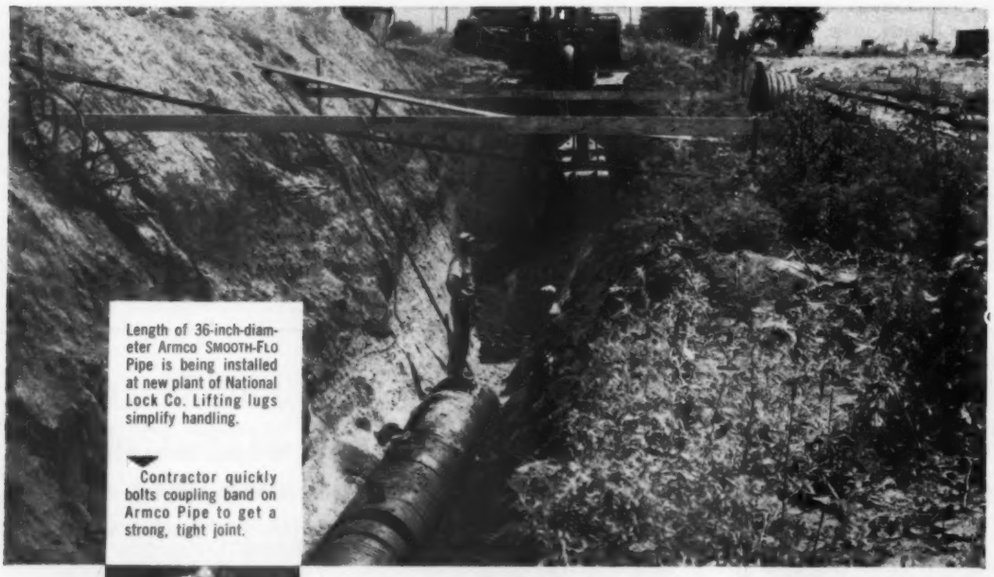
The forms for the big pipe consist of two cylindrical steel shells. The inner shell is first cleaned and set in place in the casting yard. The reinforcing cage, which is made of 1-inch bars and weighs 7¾ tons, is then set in place over the inside shell. A top ring is placed, and the outer shell is assembled with proper spacing to form the 10 or 12-inch wall thickness.

Attached to the outer shell are 12 Viber pneumatic vibrators that consolidate the concrete. These and other air-powered tools are supplied by two Chicago Pneumatic 600-cfm rotary compressors.

Just before the concrete is to be placed, the top cone is set over the area inside the inner shell. Any concrete that hits this cone is deflected into the pipe form.

Plastiment admix is added to the very dry 7-sack mix to provide a strong and dense concrete. Test cylinders show an average strength of about 6,300 psi at 28 days.

After casting, the pipes are covered



Length of 36-inch-diameter Armco SMOOTH-FLO Pipe is being installed at new plant of National Lock Co. Lifting lugs simplify handling.

Contractor quickly bolts coupling band on Armco Pipe to get a strong, tight joint.

CONTRACTOR SAYS

"Long lengths and ease of joining Armco pipe made for good time"

This was the comment of Edwin Hogan & Sons, Rockford, Illinois, contractors who installed 3,750 feet of Armco Corrugated Metal Drainage Structures for the new Fastener Division plant of National Lock Co., Rockford.

The job was to provide a storm drainage system for the 632,000 square-foot structure. More than half of the Armco Pipe installed was Armco SMOOTH-FLO®, in diameters from 24 to 36 inches. Remainder was smaller diameter asphalt-coated Armco Pipe.

Principal advantage of Armco SMOOTH-FLO is its high flow capacity, an important factor in this installation. For example, most of the 36-inch diameter pipe was on a relatively flat slope of 2 inches per 100 feet.

The pipe was supplied in 20-foot lengths. Lugs, fastened to the pipe exterior, permitted quick attachment of wire rope slings, and simplified pipe positioning.

For data on Armco Drainage Structures, send coupon. Armco Drainage & Metal Products, Inc., 4619 Curtis Street, Middletown, Ohio. In Canada: Guelph, Ontario.

ARMCO DRAINAGE & METAL PRODUCTS, INC.
4619 Curtis Street, Middletown, Ohio

☐ Send new, concise data on Armco Drainage Structures
☐ Send new, FREE "Installation Manual"

Name_____

Address_____

ARMCO DRAINAGE & METAL PRODUCTS

Subsidiary of ARMCO STEEL CORPORATION

OTHER SUBSIDIARIES AND DIVISIONS: Armco Division • Sheffield Division • The National Supply Company
The Armco International Corporation • Union Wire Rope Corporation • Southwest Steel Products

For more facts, use coupon or Request Card at page 18 and circle No. 327

with canvas shrouds. Live steam, supplied by a Dixon boiler, is then admitted inside and outside of the pipe for curing. After 12 hours, the forms are removed, but the steam curing continues for a total of 36 hours. The pipe, still in the vertical position, is brought to storage areas by the lifter-tipper, and then it is sprayed on the outside with Hunt Process white-pigmented compound and on the inside by Hunt Process clear.

Place epoxy bumper

The general contractor assembles eight of the 24-foot sections on the dry dock and then takes this 192-foot-long unit to the laying area. Because of the possibility of severe impact at the time the unit is placed, pipe at both ends of the string are protected by a highly resilient bumper of Epolite epoxy-based plastic, produced by Rezolin, Inc., Santa Monica, Calif. The inch-thick bumper is applied to the bell of one pipe and the spigot of another.

With the pipe standing on end, a form made of laminated Fiberglas and Epolite 90 laminated plastic is placed to retain the Epolite 30A plastic compound. When this compound is mixed with the hardener, it is low enough in viscosity to permit gravity casting. As it sets, the material has a compressive strength of 12,000 psi, is very inert, and has a high resilience that absorbs the shock as the pipes come together. This is believed to be the first use of this substance for this purpose.

With a crew of about 35 men, United Concrete Pipe Corp., is set up to produce eight pipes per day—the number used by the general contractor. The plant crew works under the direction of superintendent B. B. Edwards. THE END

BuDocks starts program for recruiting engineers

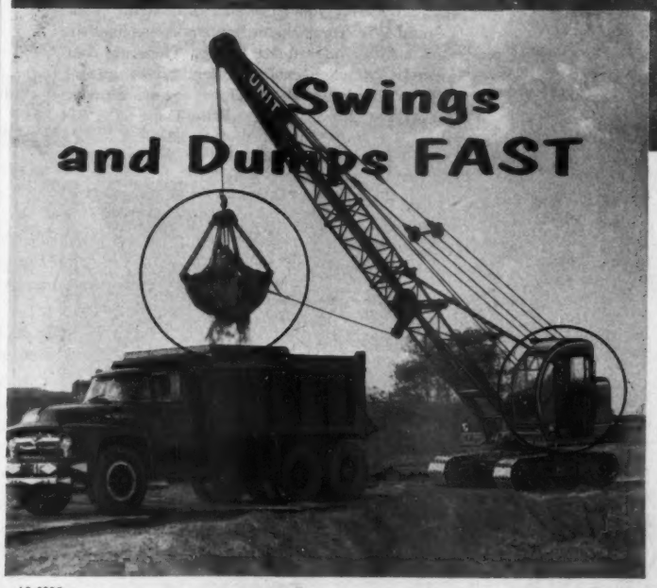
■ The Navy's Bureau of Yards and Docks has started a 5-year recruitment campaign in the nation's colleges in an effort to offset the increasing shortage of qualified engineer personnel within the bureau.

The bureau now permits payment of travel and transportation expenses of the graduate and trainee to the first duty station and provides tuition payments for special engineering courses. The formal training program for the graduates is from 18 to 30 months and includes orientation, field training, on-the-job training, and development in design, maintenance, construction, planning, and research.

Trailmobile wins award

■ The top award for the 1958 Plant Safety Contest of the Truck Trailer Manufacturers Association has been won by the Longview, Texas, plant of Trailmobile Inc., Cincinnati. The winning plant reported only one accident resulting in lost time during 508,877 man-hours in 1958. The injury frequency rate for the Longview plant was 1.97 last year. For the first six months of 1959, Longview recorded no lost-time injuries.

THIS TRACTOR AND TRAILER HOOKUP hauled 18 prestressed-concrete beams to a bridge site between Toledo and Detroit without a mishap. The forward end of the 43-ton 105-foot-long beam rests on a White Model 9064T tractor equipped with a 36-inch tandem axle, 215-hp White gas engine, and 5-speed transmission with 3-speed auxiliary.



A8-5025

Operator can SEE what he's doing at all times!

● Here is one of many contractors who prefer the UNIT 513C Challenger for handling bulk material. The pictures show the machine removing and loading used carbide slack from the pit of a large chemical plant. Equipped with ½ yard clamshell bucket, the 513C takes a big bite, swings and dumps fast. Output averages about 30 yards per hour. Hydraulic clutches, and easy-to-reach levers, simplify the machine operation. And the safety-promoting FULL VISION CAB enables the operator to SEE what he is doing at all times. Get all the facts. Write for Bulletin.

UNIT CRANE & SHOVEL CORP.

6309 W. Burnham St., Milwaukee 19, Wis., U. S. A.

For more facts, use Request Card at page 18 and circle No. 328

"It's only temporary; I lost my safety helmet overboard."

Steel roof bolts cut money, time on tunnel

■ Steel mine-roof bolts are supporting all 44 miles of New York City's new West Delaware water tunnel, thus saving time and thousands of dollars per tunnel mile.

At the start of each bolting operation, which takes only an hour and may be done along with the drilling phase of each advance, a drill jumbo is advanced to the tunnel face where roof bolts installed during the previous cycle are checked for tightness. Next, new roof bolt holes are made from atop the drill carriage and bolts are inserted and tightened until a secure clamp is achieved. Once installed, bolted roof sections are coated with a cement mortar, or gunite, to prevent small rock fragments from falling in the tunnel.

Specifications for the tunnel call for the use of 1-inch-diameter split-wedge bolts and ¾-inch-diameter high-tension expansion-shield bolts. Both types are capable of sustaining a 40,000-pound pull in hard rock, according to Republic Steel Corp., one of the suppliers. Roof bolts are securely fastened in the tunnel roof to a minimum depth of 6 feet, where they are tightened with calibrated torque or impact wrenches. Each bolt must be tightened to at least 300 foot-pounds of torque.

Judges named for ASCE achievement award

■ Editors of eight engineering magazines, including William H. Quirk of CONTRACTORS AND ENGINEERS, will serve as a jury of judges to select the "Outstanding Civil Engineering Achievement of 1959" sponsored by the American Society of Civil Engineers. The competition embraces all types of civil engineering projects and is designed to make the general public more aware of the work of the civil engineer and give credit for outstanding civil engineering skills. The winning achievement is expected to be announced at the society's annual convention in New Orleans in March, 1960.

Other members of the jury are: William S. Foster, *The American City;* Hal Hunt, *Civil Engineering;* Henry Perez, *Construction Methods;* Waldo G. Bowman, *Engineering News-Record;* W. A. Hardenbergh, *Public Works;* Harold J. McKeever, *Roads and Streets;* and James I. Ballard, *Western Construction.*

Roadside vegetation covered in HRB report

■ "Selective Cutting of Roadside Vegetation for Improved Highway Safety, Appearance and Use," Special Report 43, has been published by the Highway Research Board.

Data is given on safety; sight distance on curves and intersections; appearance of shoulders, drainageways, and slopes; construction and maintenance; appearance of utility lines; selective cutting practices; and costs. Pictures and diagrams illustrate the material.

Priced at $1.20, the report may be be purchased from the HRB, 2101 Constitution Ave., Washington 25, D. C.

New Perini branch opens

■ The Perini Corp., Framingham, Mass., has leased an entire floor in the Canada House, 680 Fifth Ave., New York City. Seven subsidiaries of the corporation will have executive offices in the building.

Robert H. Ryan, executive vice president for industrial planning and development, will be manager.

←For more facts, circle No. 329

9 years of field service prove safety and long life of Fatigue-resistant USS Tiger Brand Boom Support Assemblies

Nine years ago, American Steel & Wire Division introduced a *fatigue-resistant* Tiger Brand Wire Rope Boom Support Assembly. It was designed to combat the severe vibration on power shovels, draglines and cranes. Since then, it has been installed on thousands of machines with outstanding success.

Effectively dampens vibration. The spliced section gradually dampens vibration instead of concentrating it at one point. This results in greater safety and *much longer cable life.*

Visibility increases safety. With this construction, inspection is easy and the development of broken wires is readily detected. They are not hidden in a shank or socket basket. Thus, you can tell when to replace the assembly in time to prevent accidents.

Easy application. There's no need for extensive alteration of your present equipment. Tiger Brand Wire Rope Boom Support Assemblies are made with standard-size fittings. These are completely interchangeable on standard equipment. For further information, contact our nearest office or write American Steel & Wire, Dept. 9218, 614 Superior Ave., N. W., Cleveland 13, Ohio.

USS and Tiger Brand are registered trademarks

Greater safety—20% longer service life was obtained from these Tiger Brand Boom Support Assemblies used on a crane owned by the Hunkin & Conkey Construction Co. in Ohio.

◀ **Vibration is effectively dampened** by these Tiger Brand Boom Pendants with spliced ends. The splice can be readily inspected for broken wires—an added safety factor.

USS **American Steel & Wire Division of United States Steel**

Columbia-Geneva Steel Division, San Francisco, Pacific Coast Distributors
Tennessee Coal & Iron Division, Fairfield, Alabama, Southern Distributors
United States Steel Export Company, Distributors Abroad

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PRODUCT PARADE

For further information on any of the products described in the following section, circle the designated number on the Request Card at page 18.

Five truck cranes announced; have capacities up to 80 tons

Five new truck cranes from 35 through 80-ton capacities were recently introduced by the Harnischfeger Corp.

Included is the P&H Model 775A-TC, which handles up to 250 feet of boom. It is capable of placing concrete, setting steel, and handling lifts as high as a 21-story building.

One of the features on this 80-ton rig is Magnetorque, a method of transmitting power electromagnetically for swing. It is said to eliminate friction clutches, and requires no lining replacements, adjustments, or other maintenance.

The 35-ton Model 555C-TC and 40-ton 565A-TC are also equipped with Magnetorque. The former unit will handle up to 180 feet of boom, the latter up to 200 feet of boom.

Both the 50-ton 585A-TC and the 60-ton 595-TC will handle up to 200 feet of boom, and both employ the P&H Triple-Safe independent planetary boom hoist with one-directional cam clutches designed to provide precise control and safety.

All of the new machines have booms of T-1 steel tubular chord and lattice construction.

For further information write to the Harnischfeger Corp., Dept. C&E, 4400 W. National Ave., Milwaukee, Wis., or use the Request Card at page 18. Circle No. 130.

Offer heavy-duty disk tiller —penetration to 38 inches

The Towner Mfg. Co. has available the 25,000-pound Super Giant disk tiller for pulverizing and mixing dirt fill on earth dams, or for heavy road construction jobs and land-clearance work.

The tiller itself is heavily constructed of 6×8×1-inch frame members. Standard disk blades measure 38 inches and are spaced 16 inches apart for maximum penetration and pulverization. The unit can also be equipped with 32 or 36-inch blades and is available with 12 or 16-inch disk spacing.

The maximum operating angle of 60 degrees between gangs is hydraulically or cable-controlled from the tractor. Heavy-duty trash bars between blades are standard equipment, and optional scrapers are available in sizes from 8 to 24 feet, according to the manufacturer.

For further information write to the Towner Mfg. Co., Dept. C&E, 2111 W. 17th St., Santa Ana, Calif., or use the Request Card at page 18. Circle No. 129.

On the Series EM-2 Earth-Master, the auger is guided at all times by a rigid twin-column telescopic support frame that rests on the ground during digging.

Hydraulic hole digger for "live-boom" derricks

A new addition to its line of hydraulic hole diggers is announced by the Powers-American Division of the McCabe Powers Body Co.

Designated Series EM-2 Earth-Master hydraulic hole digger, the unit digs straight, clean holes up to 10 feet 6 inches deep and 9 to 30 inches in diameter.

This fully powered digger is designed for use with a "live-boom" derrick. Power is supplied by a hydraulic pump driven by a full-torque drive assembly on the truck transmission. A reversible hydraulic motor rotates the auger and automatically shifts to low speed for digging and to high speed when the auger is fully raised for "spin-off." A separate hydraulic motor feeds and raises the auger under power.

The power feed of the auger, combined with down pressure which can be applied with the hydraulic derrick, enables the unit to dig quickly in any type of soil, even exceptionally hard or frozen soil.

When not in use, the digger unit stows in brackets on the derrick and can be easily removed or transferred to another vehicle.

For further information write to the McCabe Powers Body Co., Powers-American Division, Dept. C&E, 5900 N. Broadway, St. Louis 15, Mo., or use the Request Card at page 18. Circle No. 67.

CASE®

"420" Industrial Loader gets more push-power for faster digging with Torque Converter Drive

For a machine that weighs only 7,120 lbs., the Case "420" Industrial Loader packs a lot of power. It's billed as the only low-priced wheel type loader actually designed for production digging assignments. With 12,000 lbs. drawbar pull and 4,600 lbs. break-out force, the 15 cu. ft. bucket gets heaping loads on every pass, even out of hard-packed materials.

Secret of this amazing power is Twin Disc Torque Converter Drive

. . standard equipment on the Case '420." Compared to direct mechanical drives, the torque converter provides up to 56% greater push-power at the all-important working speeds.

As the load increases, torque output is multiplied through an infinite number of speed ratios to overcome load resistance smoothly and automatically. Since the engine is not lugged down, the 21-gpm hydraulic pump delivers full break-out power at all times. No tractive effort is lost due to tire slippage, because the slippage occurs within the torque converter.

In addition to boosting power, the torque converter's fluid cushion absorbs shock loads to prevent damage to engine and power train. There's no need for clutching during the digging operation, so operator efficiency goes up while the problem of clutch wear and replacement disappears.

Add all these features together and you get this answer: More dirt moved in less time and with far less effort. A test of the Case "420" Front-End Loader will convince you that Twin Disc Torque Converter Drive belongs on all your earthmoving equipment.

TWIN DISC
Torque Converters

TWIN DISC CLUTCH COMPANY, Racine, Wisconsin • HYDRAULIC DIVISION, Rockford, Illinois

BRANCHES OR SALES ENGINEERING OFFICES: CLEVELAND • DALLAS • LOS ANGELES • NEWARK • NEW ORLEANS

For more facts, use Request Card at page 18 and circle No. 330

Heavy-duty spade offered for stiff clay, hardpan

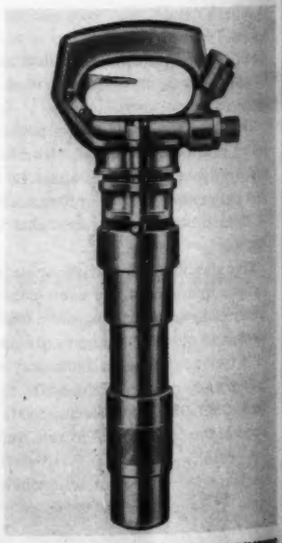
A new heavy-duty clay spade is announced by Davey Compressor Co.

Designated Davey-Holman Model 101, it is reputed to be highly efficient for excavating stiff clay and hardpan, as well as shale. When equipped with an extended shaft and T-handle, it is suitable for use as a trench digger.

Important features include a honed cylinder bore, claimed to more than double normal air-tool life. The main valve is of combination spool and disk type, and the throttle valve operates in a renewable sleeve.

The clay spade with closed handle is 19 inches long and weighs 20½ pounds. With T-handle, for use as trench digger, the tool is available in either 23¼-inch or 29¼-inch lengths. Weights are 25¼ pounds and 27¾ pounds, respectively.

For further information write to the Davey Compressor Co., Dept. C&E, Franklin Ave., Kent, Ohio, or use the Request Card at page 18. Circle No. 131.

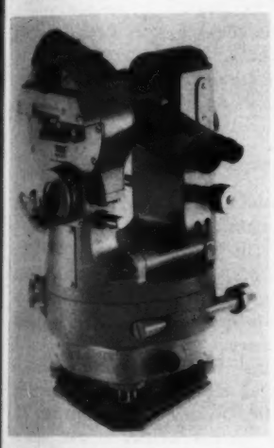


This Flex-Plane gas-electric combination finisher-float machine utilizes two separate gas-electric drives to achieve a smoother power flow with infinite speed ranges both to the drive wheels and screeds. Thus the rate of machine travel doesn't affect screed operation. The self-contained finisher section can be quickly detached and used independently; its frame adjusts from 12 to 26 feet to handle single or double lanes, ramps, or approaches. Both the finishing and the float sections can be equipped with their own pneumatic wheels for over-the-road towing. For further information write to the **Heltzel Steel Form & Iron Co.**, Dept. C&E, Warren, Ohio, or use the Request Card at page 18. Circle No. 86.

New theodolite reads to one second of arc

The Sethe, a new theodolite reading directly to 1 second of arc, both vertically and horizontally, is announced by the Fennel Instrument Corp. of America.

The circles are read directly by means of a micrometer, and the angles can be estimated further, based on the experience of the observer, to from ½ to 1/10 of a second. The telescope transits at both ends. The lenses have an antireflection coating. The instrument is equipped with a quick setting and centering



arrangement, and is interchangeable in the leveling head with targets and subtense bar.

An optical plummet is built into the equipment and may be checked at any time by rotation. Accessories are available.

For further information write to the Fennel Instrument Corp. of America, Dept. C&E, 50 Colfax Ave., Clifton, N. J., or use the Request Card at page 18. Circle No. 132.

Hydraulic track adjuster features positive locking

Positive locking and exact vernier adjustment are features claimed for the new grease-gun-operated Steco hydraulic track adjuster offered for International Harvester bulldozer and Drott equipment by the Special Tractor Equipment Co.

Other features are quick, one-man adjustment of tracks making it possible to loosen tracks temporarily to meet varying soil conditions, and ease of initial installation.

For further information write to the Special Tractor Equipment Co., Dept. C&E, Meriden, Conn., or use the Request Card at page 18. Circle No. 105.

OLIVER
Sanfilippo's OC-4 with 72½" dozer does it all—land clearing, assists in basement digging, back filling, final grading on this commercial building job.

"My OC-4 with 'Spot-Turn' saves me 2 hours in 8!"

Jack Sanfilippo is a keeper of accurate records. As owner of his own excavating company in Keyport, N.J., he finds it pays to be. The facts prove that with his OC-4 he can now do in six hours what took eight with an older tractor not having the OC-4's "Spot-Turn" steering advantages.

That's a 25% gain in production and profits—just by the addition of *one* OC-4. Splendid close-quarter maneuverability with shortest turn-around radius accounts for most of it—with the OC-4's higher measure of diesel power doing the rest. Not only that, but Sanfilippo's earnings are even greater when you consider his unbelievably low fuel operating cost—just $7.65 for a 40-hour week!

Come see...come try the OC-4 for yourself—the compact, big-job tackler that's *first* in its crawler class for drawbar pounds pull and *lowest* in its class for price!

THE OLIVER CORPORATION
Industrial Division, 19300 Euclid Ave., Cleveland 17, Ohio
a complete line of industrial wheel and crawler tractors and matched allied equipment

Here's the new look in tractor catalogs: the all-new OC-4 bulletin. It's heavy on job-application pictures and data...shows the OC-4 tooled-up with a dozen different work-speeding, income-boosting equipment changes! It's sound business reading that carries a rewarding message for any tractor user. Mail coupon.

Ask your Oliver Distributor for a demonstration of the OC-4's work power

T30-9

Please send a copy of your new 16-page, color catalog on the OC-4 tractor.

Name:..... (Please print)

Company.....

Address.....

City.....Zone.....State.....

For more facts, use coupon or Request Card at page 18 and circle No. 331

For further information on any product described in this section, circle the indicated number on the Request Card at page 18.

NOW–AIR TOOLS WHEN NEEDED

Worthington's Guaranteed Availability Plan keeps a full complement of tools on the job even if some are in the shop for checkup or repair. All you do is: 1) bring your hand-held Blue Brute air tool to your Worthington distributor. 2) While it's in his shop he will lend you another tool.

See your nearest Worthington distributor for complete details about the Guaranteed Availability Plan. Worthington Corporation, Holyoke, Massachusetts.

60-18

WORTHINGTON

For more facts, use Request Card at page 18 and circle No. 332

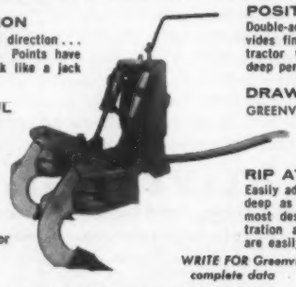
Big Ripper Tackles Tough Rock Jobs

Designed to use full power of IH TD15, TD20 or TD24

The tremendous power of the IH TD15, TD20 or TD24, plus the 10,000-pound Greenville tractor-mounted rock ripper, shatters rock and packed earth for easy scraper loading. On many jobs explosives, shovels and trucks are eliminated. Put this power-packed team to work for you. Your IH dealer can give you the facts. Let him show you how you can save as much as 25% on any earth or rock moving job.

LIVE SWIVEL ACTION
Shanks swivel 15° in either direction . . . follow tractor like a trailer. Points have live action that shatters rock like a jack hammer.

RUGGED POWERFUL SHANKS
Scientific contour gives extra strength at strain points and pulls points down deep . . . rocks roll out and clear of headframe. Made of tough, heat-treated, manganese-moly steel. Mount one, two or three shanks as needed.



POSITIVE CONTROL
Double-acting hydraulic system provides fingertip control and puts full tractor weight on points for fast, deep penetration.

DRAWBAR TAKES PULL
GREENVILLE drawbar replaces the tractor drawbar and drawbar brackets. Clevis is accessible with ripper installed.

RIP AT ANY DEPTH
Easily adjusted to permit settings as deep as 24". Points are always at most desirable angle for best penetration and splitting action. Points are easily replaced.

WRITE FOR Greenville Bulletin IH-658. It gives complete data

See it at your International-Harvester Dealer's

GREENVILLE
STEEL CAR COMPANY

Greenville, Pennsylvania

For more facts, use Request Card at page 18 and circle No. 333

The Model TL-16 TractoLoader has a 7,000-pound carry capacity.

New loader speeds work in sand, gravel yards

The new Model TL-16 TractoLoader announced by the Allis-Chalmers Mfg. Co. is specially designed for speeding excavating-loading work in sand and gravel yards and on construction jobs.

The TL-16 weighs 18,000 pounds and has a 7,000-pound carry capacity. Available for use with the new unit are five buckets, ranging in size from 1½ to 4 cubic yards. For rapid loading, buckets tip back 40 degrees at ground level. For additional stability while traveling, the buckets tip back at an angle of 45 degrees when at carry height (14 inches above the ground).

The new TractoLoader can be obtained with either a Hercules 100-hp gasoline engine or an Allis-Chalmers 104-hp diesel engine. Top travel speed of the unit in either forward or reverse is 27 mph. It is equipped with a single-stage 3.5:1-ratio torque converter, rear-wheel power steering, 4-wheel power brakes that can be operated by either right or left foot, and a separate positive-locking mechanical parking brake.

For further information write to the Allis-Chalmers Mfg. Co., Dept. C&E, P. O. Box 512, Milwaukee, Wis., or use the Request Card at page 18. Circle No. 48.

New automotive jacks for heavy equipment

Two new heavy-duty automotive service jacks have been added to the Simplex line by Templeton, Kenly & Co. These hydraulically powered units, in 10 and 20-ton capacities, are especially designed for shop service in lifting large trucks, crawler-type tractors, power shovels, cranes, and similar heavy equipment.

The 10-ton model, SJ740, has a 66-inch-long chassis, and lifts from a low point of 5⅞ inches to a high point of 24 inches. The complete jack weighs 348 pounds.

The 20-ton jack, Model SJ750, has a 68½-inch-long chassis, and lifts from a low point of 6½ inches to 25½ inches. Weight complete is 530 pounds.

For further information write to Templeton, Kenly & Co., Dept. C&E, 2525 Gardner Road, Broadview, Ill., or use the Request Card at page 18. Circle No. 20.

There's a right time for down-time!

Plan maintenance with *Hobbs* HOUR METERS

- Get the information you need for on-time performance of planned maintenance — for superior service and maximum equipment use.
- Set up a really sound basis for rental and leased equipment.
- Obtain operating time in hours and minutes — at a glance!
- True electric timing instruments — NOT revolution counters.

FOR DIRECT OR ALTERNATING CURRENT

Hobbs d-c Hour Meter tells when lubrication and other service functions are due on any equipment powered by an internal combustion engine, gasoline or diesel. Hobbs a-c Hour Meter has a wide range of applications on any equipment powered by line current.

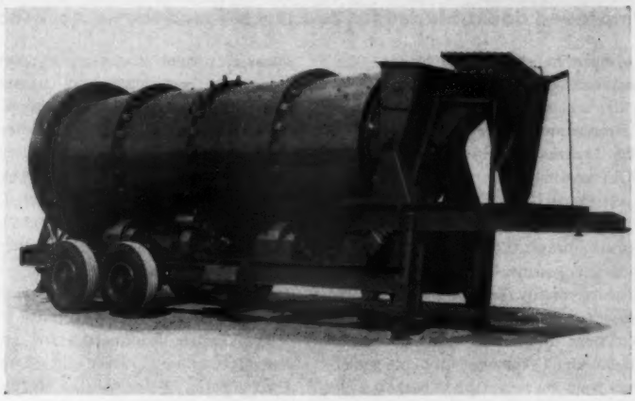
Distributors in Principal Cities
WRITE FOR CATALOG 600

Symbol of SW Excellence

John W. Hobbs Corporation
A DIVISION OF STEWART-WARNER CORPORATION
2867 YALE BLVD., SPRINGFIELD, ILLINOIS

For more facts, use Request Card at page 18 and circle No. 334

One of Barber-Greene's new high-capacity aggregate dryers, this unit comes complete with fifth-wheel towing hitch, brakes, and similar equipment for over-the-road travel.



Aggregate dryers offered in capacities to 200 tph

Three new aggregate-dryer designs, covering the capacity range from 60 to well over 200 tph, are announced by Barber-Greene. The dryers are designed for use with any of Barber-Greene's higher-capacity continuous-mix or batch-type asphalt plants, or for use with plants of other make.

The new designs are designated as Models DA-50, DA-60, and DA-70. All three models are available on portable, pneumatic-tire chassis, complete with fifth-wheel towing hitch, brakes, and similar equipment for over-the-road travel. All may also be obtained without running gear, for use in stationary installations.

For further information write to the Barber-Greene Co., Dept. C&E, 400 N. Highland Ave., Aurora, Ill., or use the Request Card at page 18. Circle No. 134.

New pocket penetrometer for soil classification

The bearing capacity of cohesive soils can be determined rapidly in the field with the new Model CL-700 pocket penetrometer offered by Soiltest, Inc.

New features of this device include a maximum recording ring on the barrel of the calibrated piston; a direct-reading scale in unconfined compressive strength or bearing capacity in tons per square foot or kilograms per square centimeter.

The maximum indicating ring stays in fixed position after the reading has been taken and can be returned to its zero position by a flick of the finger. The instrument is supplied in a plastic carrying case with a belt loop.

For further information write to Soiltest, Inc., Dept. C&E, 4711 W. North Ave., Chicago 39, Ill., or use the Request Card at page 18. Circle No. 133.

New hardfacing process uses spray-welded powder

A new process for hardfacing—spray-welding a ceramic powder—is announced by the Republic Hardfacing Corp.

According to the manufacturer, spray-welded Cermet stops the burning effects of exhaust gases, erosion, "necking", and corrosion on engine valves. It fuses with the parent metal, and will not crack or spall under severe shock, heat, wear, or abrasion.

For further information write to the Republic Hardfacing Corp., Dept. C&E, 479 Broadway, Bedford, Ohio, or use the Request Card at page 18. Circle No. 25.

Brought you savings up to 70% with Truco

MASONRY DIAMOND DRILLING . . . now brings you 3 great TRUCO BLADES and SAWS to cut sawing costs

Truco original masonry diamond drilling equipment revolutionized masonry drilling and delivered savings never thought possible. Now Truco enters the masonry and concrete sawing field with a complete line of saws and three great blades that will deliver typical Truco savings.

Truco Blades fit all saws and are at your Truco dealers now. Ask about them. TruBond Diamond Impregnated Blades for the finest, fastest, lowest-cost cutting. Truco TruBond Break-Resistant Abrasive Blades for high-mileage cutting—the finest reinforced blade made today. Truco Standard Abrasive Blades for high cutting power with low initial cost.

Depend on Truco's 50 years of specialized experience. It will save you money. Write for the name of your dealer and new catalog.

TRUCO

For more facts, use Request Card at page 18 and circle No. 335

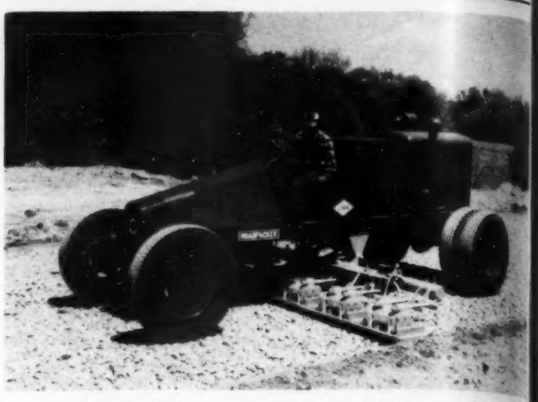
Improved dozer blades for two tractor models

Improved bulldozer blades are available for two models of Caterpillar tractors.

One is an angling blade for the No. 955 Traxcavator, designated the No. 955A angling bulldozer. Available for both Series C and Series E machines, it incorporates screw-type tilt braces in place of the former cast, serrated tooth adjustment. Benefits of this feature, claims the manufacturer, are the provision of easier, quicker adjustment and more rigid positioning of the blade. The over-all blade width has been increased by 9 inches to a total of 10 feet 2⅛ inches; also, a stronger, wider C-frame is used. Weight of both blade and C-frame has been increased to 2,090 pounds.

A new No. 4A bulldozer has been provided for both the 44 and 60-inch-gage D4 tractors, also using the screw-type tilt braces. Strength of the C-frame has been increased not only by the tilt-brace change, but also by replacement of the former angling pin by redesigned angling brackets mounted on top of the C-frame.

For further information write to the Caterpillar Tractor Co., Dept. C&E, Peoria, Ill., or use the Request Card at page 18. Circle No. 135.



The new Roadpacker's six 437-pound hydraulically operated vibrators produce deep, penetrating vibrations that give uniform densities to all types of granular materials.

New vibrator compacts up to 600 tph

Offered by the Baldwin-Lima-Hamilton Corp.'s Construction Equipment Division, the Model D Roadpacker is said to compact granular materials in single lifts up to 12 inches deep at rates up to 600 tph.

Six 437-pound hydraulically operated vibrators produce deep, penetrating vibrations that give uniform densities to all types of granular materials used in highway and airport construction. The vibrators are completely sealed from outside dirt, and require no daily maintenance.

Driven by a fluid motor while compacting, the speed can be varied by a dial selection on a flow-control valve to select any speed between 20 and 95 fpm. The machine can be transported at speeds up to 30 mph on the job or over the highway. End vibrators fold up to permit highway travel or narrow-width compacting. The Model D compacts in either forward or reverse direction in response to movement of a single lever control.

The six vibrator shoes are mounted on a common control bar, giving a maximum compacting width of over 13 feet. A widener attachment, which enables two of the shoes to operate in a widening trench up to 11 inches below the existing pavement, is available.

For further information write to the Construction Equipment Division, Box L, Baldwin - Lima - Hamilton Corp., Dept. C&E, Lima, Ohio, or use the Request Card at page 18. Circle No. 65.

Trenching-rig shanks added to tooth line

Petersen Engineering Co. has announced the addition of trenching-machine shanks to its line of teeth and earthboring augers.

The outstanding features of the new Pengo No. 35 Wisdom Tooth for small machines and the Pengo No. 16A50 Wisdom Tooth for production

MORE CONTRACTORS BUY MORE
MALSBARY HPC CLEANERS
THAN ANY OTHER MAKE

Shown here is popular Model 250 HPC cleaner. Other Malsbary sizes range from budget-priced Handy Dandy to big, 4-gun Model 500.

Malsbary High Pressure Combination cleaner performance counts most when the cleaning job is really tough... as it is on most contractors' jobs. Typical user comments go like these:

"With Malsbary we can do in minutes what used to take hours"

"Scrapers, bulldozers and trucks, embedded with grease, grime, clay and dirt, slow down. Periodic cleaning on the job by our trailer-mounted Malsbary HPC greatly improves efficiency. I don't know what we'd do without it."

Hundreds of users have proved to their satisfaction that Malsbary cleaners do reduce their overhead. Here's how you can demonstrate this for yourself.

MONEY BACK OFFER Buy a Model 250 (or bigger) HPC cleaner and try it for 10 days; if you are not completely satisfied that it does reduce your cleaning costs, return it and our dealer will refund your money. You can't lose! Call him now (see yellow pages of phone book) or write us.

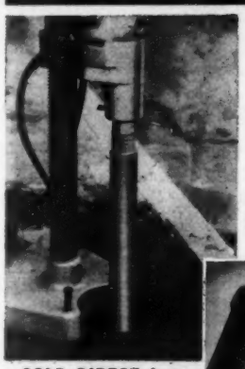
135

MALSBARY MANUFACTURING CO. SINCE 1921

For more facts, use Request Card at page 18 and circle No. 336

Clipper "SAVE SHORT TYRS"

DIAMOND CORE BITS GIVE GREATER DRILLING ECONOMY



Drilling holes in minutes through reinforced concrete for installation of guard rails on this loading dock, is just one of the many industrial applications for Clipper Surface Set Oriented Diamond Core Bits. For more speed and economy in your drilling jobs call your Clipper Factory Trained Representative for prompt attention right on your job. Call Clipper COLLECT for the address of your closest factory branch.

Mr. Clipper

Clipper SURFACE SET ORIENTED Diamond Core Bits utilize whole diamonds set at a predetermined angle (oriented) to provide longer bit life, faster drilling, lower resetting costs. Impreignated Economy bits also available (non-resettable).

SOLD DIRECT from Offices & Warehouses — Coast to Coast.

CLIPPER MANUFACTURING CO. Kansas City 8, Mo.
General Office and Factory 2803 Warwick • Phone GRand 1-0766
Makers of SuperMatic and Select-A-Notch Masonry Saws • Concrete Saw Diamond and Break-Resistant Blades • Joint Sealers
Factories in ENGLAND • FRANCE • GERMANY • ITALY

For more facts, use Request Card at page 18 and circle No. 337

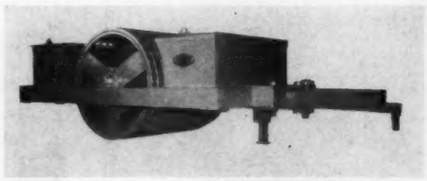
Petersen Engineering now offers forged-steel teeth for use on trenching machines.

machines are that they are reversible, quick-change forged-steel teeth, according to the manufacturer.

The Pengo Wisdom Tooth is held firmly in position, avoiding wobble and thereby providing smooth cutting; requires less horsepower; and usually permits the operation of the trenching machine in one higher gear for greater footage every day, the company claims. The shanks are so designed that there is a smooth surface all along the path of the shank onto the bucket, avoiding horsepower-consuming shoulders.

For further information write to the Petersen Engineering Co., Inc., Dept. C&E, P. O. Box 330A, Santa Clara, Calif., or use the Request Card at page 18. Circle No. 52.

Improved grade roller for subbase materials



For use in conjunction with a motor grader or tractor provided with ripper teeth for breaking up the roadbed, the Crusher-Pak features complete peripheral cutting edges and alternate breaker bars.

The Eskridge Equipment Co. announces a new, improved Twin Crusher-Pak grate roller. Featuring complete peripheral cutting edges and alternate breaker bars, it has baskets of high-strength heat-treated alloy steel.

This perforated roller is used in conjunction with a motor grader or tractor provided with ripper teeth for breaking up the roadbed. The Crusher-Pak follows, disintegrating the dislodged lumps until the desired pulverization is obtained.

The standard unit includes internal cleaners, removable ballast tanks, rear towing eye, folding leg stands, adjustable drawbar, and universal swivel towing eye.

For further information write to the Eskridge Equipment Co., Dept. C&E, 1214 S. Norwood, Tulsa 12, Okla., or use the Request Card at page 18. Circle No. 136.

Teardrop curves simplify highway layout work

Teardrop curves designed to greatly simplify highway interchange design are offered by the Keuffel & Esser Co. Said to be especially effective in short-radius work such as limited-speed controls, exits, entrances, and acceleration/deceleration lanes, the curves can be used in any layout work involving circles and arcs.

All curves in this new series have double tangents, two radial lines, and a hole for marking the center of arc. They can be used on drawings to any scale. Using the double tangents, curves tangent to a line can be drawn in for directions without removing the curve from the drawing. In addition, curves as long as 270 degrees can be drawn in one operation.

The construction of the two radial lines with the center marking hole simplifies locating points of tangency for simple, compound, and reverse curves.

Made of transparent, durable Luxylite, these curves are available in complete sets as radius or degree curves to the arc definition, eleven to a set.

For further information write to the Keuffel & Esser Co., Dept. C&E, Adams and Third Sts., Hoboken, N. J., or use the Request Card at page 18. Circle No. 137.

26-39

.....with SIKA QUICKSETS

SIKA No. 2
. . . for high pressure leakage thru concrete in deep basements, tunnels, shafts and foundations. Mortar will set in 15-30 seconds - forms plug that bonds tightly. Will not wash away.

SIKA No. 4A
. . . for slow leaks and seepage thru concrete or masonry. Cement mortar sets in 45-60 seconds - bonds tightly to wet leaking masonry. Dilute with water to change speed of set.

other SIKA Quicksets

SIKA NO. 3
For Fast Setting Pointing Mortar

SIKA NO. 4
For Grouting Against Running Water

SIGUNIT
For Fast Setting Air Placed Mortar

Sika
SIKA CHEMICAL CORPORATION
PASSAIC · NEW JERSEY
COMPOUNDS FOR MASONRY and CONCRETE CONSTRUCTION
DISTRICT OFFICES: ATLANTA · BATON ROUGE · BOSTON · CHICAGO · DALLAS · DETROIT · KANSAS CITY · PITTSBURGH — DEALERS IN PRINCIPAL CITIES — AFFILIATES AROUND THE WORLD
RELIABILITY · EXPERIENCE · SERVICE

For more facts, use Request Card at page 18 and circle No. 338

NEW Coffing SEALED Safety Pull Ratchet Lever Hoist

Five Seals Assure Efficient Hoisting In Any Weather

Here is a new hoist designed for safe, efficient hoisting in any weather. Loads will not slip because the brake mechanism of the Safety Pull Hoist is permanently sealed in five places against moisture, oils, chemicals and dirt—all common causes of hoist slippage.

The spring-loaded Neoprene seals assure that brake performance will remain constant under all exposure conditions. Another advantage of the sealed brake is that it will not freeze or lock—is always free to lower even after accidental overload.

Safety features include the exclusive Safety Handle which bends to indicate overload. The free chain control is protected so that it will not accidentally trip.

The Safety Pull Hoist is easy to operate. The handle pull to lift rated load requires minimum effort. Load spotting is precise to within a fraction of an inch. Up and down controls are away from operator's hand so he can use shorter leverage for greater speed with light loads. Ball bearing swivel load hook and plated chain are additional features.

Five models, ¾, 1½, 3, 4½ and 6-ton capacities are available. For additional information ask your distributor or write for Bulletin ADH-78.

COFFING HOIST
DIVISION OF
DUFF-NORTON COMPANY
810 Walter Street · Danville, Illinois

COFFING HOISTS
Ratchet Lever · Air
Hand Chain · Electric

DUFF-NORTON

DUFF-NORTON JACKS
Ratchet · Screw
Hydraulic · Worm Gear

For more facts, use Request Card at page 18 and circle No. 339

Claimed to be the world's largest secondary crusher for portable operation is this Lippmann 60×30-inch roll crusher, built for W. O. Pelphrey of Fort Worth, Texas. Working in conjunction with a 30×42-inch Lippmann portable primary plant, this unit produces over 5,000 cubic yards of material per day, and reportedly has hit as high as 7,575 yards in a single day's production. Primary equipment at the Pelphrey operation includes a 42-inch×35-foot portable apron feeder; 4×8-foot heavy-duty double-deck scalping screen; 30×42-inch Grizzly-King jaw crusher; 36-inch×30-foot product discharge conveyor; and a 30-inch×12-foot reject conveyor. The secondary plant utilizes a 36-inch×50-foot feed conveyor; 60×30-inch roll crusher (pictured); 5×14-foot triple-deck screen; and two 24-inch×12-foot reject conveyors. For further information write to **Lippmann Engineering Works, Inc.**, Dept. C&E, 4603 W. Mitchell St., Milwaukee, Wis., or use the Request Card at page 18. Circle No. 64.

"Torrent" Model 15-T, 1½"

"Torrent" Model 20-T, 2"

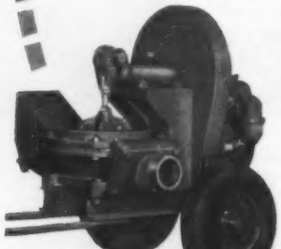
"Torrent" Model 30-T, 3"

"Torrent" Model 25-T, 2½"

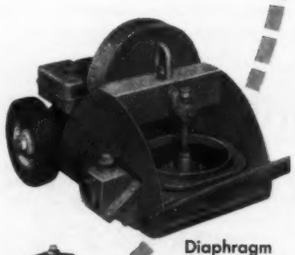
NOW... You Can Pick the HALE Pump That Serves Your Purpose *BEST!*

No matter what your de-watering problem may be, there's a Hale pump to handle it and at the lowest possible cost. Because now Hale has added Diaphragm pumps to its line of "Torrent" centrifugal pumps.

And now Hale can offer you a pump for moving high volumes of water fast; for constant, positive control of seepage; or for trouble-free pumping of high-solid-content water. In fact, there's a Hale pump for practically every type of pumping job.

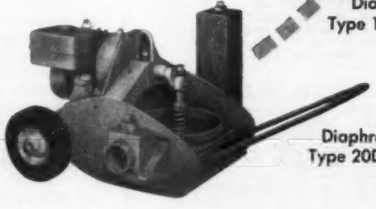


Diaphragm Type 40DP, 4"



Diaphragm Type 15DP, 1½"

Diaphragm Type 30DP, 3"



Diaphragm Type 20DP, 2"

FREE . . . Handy Pump Selector File

Gives you detailed information and illustrations on how to pick the right Hale Pump for the right job. Attractively bound in file folder for your finger-tip convenience.

Write today to:

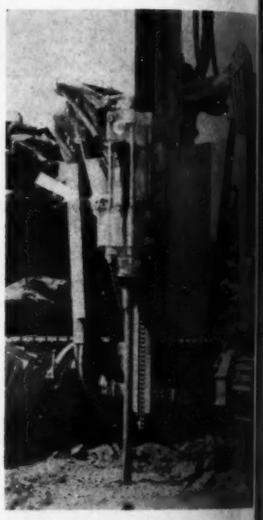
HALE FIRE PUMP CO.
CONSHOHOCKEN, PA.

HALE . . . ***manufacturers of custom designed equipment for industrial and contractors' use***

For more facts, use Request Card at page 18 and circle No. 340

Blast-hole drill features dual rotation system

The Model 450-DR blast-hole dr has been introduced by the Joy Mf Co. The drill features Joy's new du rotation system, said to elimina the need for conventional rifle ba actuated reverse rotation, and ad extra power to permit faster drilli in the roughest formations.



Joy Mfg. Co.'s Model 450-DR blast-hol drill features the firm's dual rotati system, seen mounted on the front o the machine (indicated by arrow).

Dual rotation is provided by a vane-type air motor, connected to the dri chuck and controlled independently of the standard rifle bar rotation. Because of its independent operation, there is no hammering of the drill steels during coupling or uncoupling.

The new device, according to Joy, does not sacrifice any of the standard rifle bar rotation. Instead, it adds power for drilling by supplementing the normal drilling rotation. Moreover, the company says that its four-pawl positive rotation in one direction instead of two-pawl rotation in either direction, as used in conventional reverse-rotation designs, eliminates excessive pawl wear.

The Model 450-DR can be mounted on either the Model TDL or TDH self-propelled Trac-Drill.

For further information write to the Joy Mfg. Co., Dept. C&E, Henry W. Oliver Bldg., Pittsburgh 22, Pa., or use the Request Card at page 18. Circle No. 30.

Powerful new earthmover features 270-hp engine

A new high-horsepower, large-capacity earthmover with V-8 engine is announced by the LeTourneau-Westinghouse Co. Named the V-Power C Tournapull, it is teamed with a 20-cubic-yard C Fullpak scraper.

The machine's powerful optional engine is a GM Model 8V-71 270-hp 8-cylinder 2-cycle diesel. This power plant develops its rated horsepower at 2,100 rpm, while it reaches maximum torque at 1,200.

The unit's step-gear transmission offers 5 forward speeds to 27 mph. A heavy-duty 16-inch double-plate air-assist clutch is standard on the machine.

Featured are a struck capacity of 14 cubic yards and a heaped capacity of 20 cubic yards.

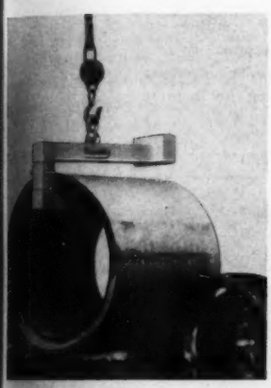
The new machine is readily interchangeable with other trailing units designed for use behind the prime mover. Currently available in the C size are a 22-ton rear-dump and a 20-ton crane.

For further information write to the LeTourneau-Westinghouse Co., Dept. C&E, 2301 N. E. Adams St., Peoria, Ill., or use the Request Card at page 18. Circle No. 72.

Latest in the LeTourneau-Westinghouse line is this 270-hp C Tournapull with a V-8 diesel engine and a 20-yard-heaped-capacity Fullpak scraper.

Concrete-pipe lifters handle lengths to 8 feet

Addition of four standard models to the Cady line of lifters for handling concrete pipe in diameters up to 72 inches and lengths up to 8 feet is announced by Cady Metal Fabricating Inc.



These lifters are counterbalanced to hang level when empty. Standard capacities range up to 15,500 pounds; custom models are also available.

According to the manufacturer, welded box-section design and use of high-strength alloy steel reduces dead weight and cuts wear and tear on laying equipment and yard cranes.

For further information write to Cady Metal Fabricating Inc., Dept. C&E, 88 Schenck St., North Tonawanda, N. Y., or use the Request Card at page 18. Circle No. 138.

Add new hammermill to line of crushers

A new hydraulically adjusted hammermill is announced by Pioneer Engineering, division of Poor & Company, Inc.

The new crusher, Model 4034, features reversible breaker plates that are simply adjusted by means of hydraulic jack and shims. Grate bars, with size openings available from ¼ inch to 3 inches, can be arranged in various combinations to produce the desired product.

For further information write to Pioneer Engineering, division of Poor & Company, Inc., Dept. C&E, 3200 Como Ave. S. E., Minneapolis, Minn., or use the Request Card at page 18. Circle No. 9.

WHEN CONSTRUCTION JOBS CALL FOR SOIL COMPACTION

BARCO is the ANSWER!

YOU can't get *high degree* SOIL COMPACTION by "patting it" or "shaking it." For deep, penetrating force to produce 95%, 97.5%, or even 100% compaction, Barco Rammers are THE ANSWER. For many soil conditions, they are the only answer.

High degree soil compaction is worth every cent it costs. Barco Gasoline Rammers are especially effective for compacting fill in restricted areas—close to walls, culverts, abutments, around footings, and in trenches —on all kinds of construction jobs: Toll Roads, Freeways, and Highways; Air and Missile Bases, Hydroelectric Power and Flood Control Dams, Bridges, Buildings, and Housing Developments.

ONE MAN OPERATION—On area tamping, one man can average 20 to 30 cubic yards of fill per hour. On 18" trench backfill, using lifts up to 24", the rate is 360 to 600 feet per hour. Economical to operate; economical to maintain.

ASK FOR A DEMONSTRATION—We will be glad to arrange a demonstration for you; see our nearest distributor or write.

Sold and Serviced by the Nation's Leading Distributors

For Soil Compaction Close to Walls, Culverts and Abutments —in Trenches, Ditches

BARCO (PRODUCTS BACKED BY EXPERIENCE — BARCO — FOUNDED 1906) RAMMER

BARCO MANUFACTURING CO.
518K Hough St., Barrington, Illinois

Gentlemen:
YES! I want to know about Barco Rammers for Soil Compaction:

Name _____
Company _____
Address _____

☐ Please send me the name and address of your nearest dealer.
☐ Without obligating me, I would be interested in a DEMONSTRATION.
☐ Please send General Catalog No. 621.
☐ Please send free bulletin on "SOIL COMPACTION COST DATA."

For more facts, use Request Card at page 18 and circle No. 341

Lightweight pipe cutter requires single operator

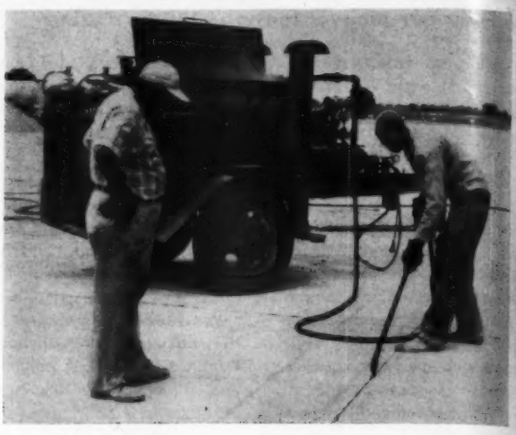
Easy portability, fast one-man operation, and clean, accurate cuts are features claimed for a new line of Reed rotary four-wheel pipe cutters designed for large steel and cast iron pipe from 12 to 24 inches in diameter.

The 16-inch size weighs only 51 pounds complete, and all of the units separate into three easily carried parts. A minimum of digging is required since the four-wheel design requires no more than 45 to 60 degrees of handle swing, and only a 6 to 8-inch channel is needed under the pipe.

A pipe guide automatically aligns the cutter for a right-angle cut, and the hinged adjusting screw permits the cutting wheels to adapt to out-of-round pipe without loss of cutting efficiency.

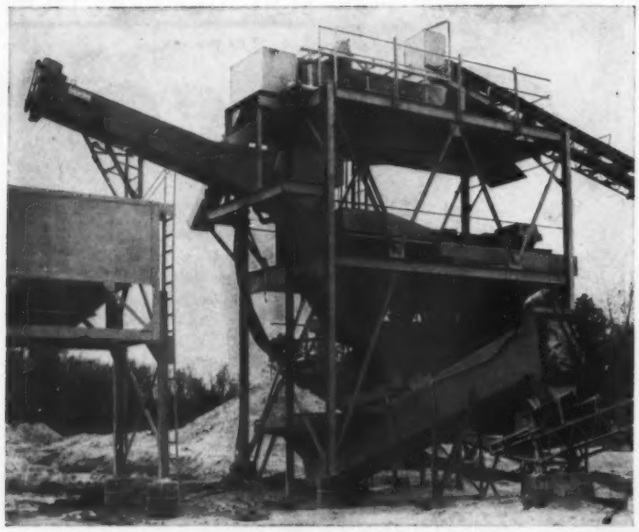
Since the cutter is manually operated, it requires no power source and creates no explosion or electrical hazards, even when used in mud or water.

For further information write to the Reed Mfg. Co., Dept. C&E, 1425 W. Eighth St., Erie, Pa., or use the Request Card at page 18. Circle No. 17.



A hot-pour joint sealer, the Clipper Model AC-40, is shown working on the renovation of runways and aprons at the Olathe Naval Air Base in Olathe, Kans. The concrete was originally placed during World War II and in recent months has required a considerable amount of maintenance. The Clipper AC-40 reseals the expansion joints after old material is cleaned out by 18-hp Clipper concrete saws using reinforced green concrete abrasive blades. The renovation project is being done by the Rohrer Construction Co., Kansas City, Kans. For further information write to the **Clipper Mfg. Co.**, Dept. C&E, 2800 Warwick, Kansas City 8, Mo., or use the Request Card at page 18. Circle No. 93.

To obtain further information on any of the products described in this section, circle the number given at the end of the item on the Request Card at page 18.



"Our Material Readily Meets Specifications"

SAYS SEAFORD SAND & GRAVEL CO., SEAFORD, DELAWARE

EAGLE AGGREGATE PROCESSING EQUIPMENT readily enables Seaford Sand & Gravel Co. to meet Delaware State Highway Department Specifications. It does three things for them:

1. Washes the fine material, removing any loam encountered in the deposit.
2. Classifies the fine material, producing a high quality concrete sand that is well within specifications.
3. Washes impurities from the coarse material, thus providing sparkling clean gravel.

All this has been accomplished with a modest investment that will quickly return its cost.

The Eagle Equipment consists of a 20' Water Scalping-Classifying Tank with power-operated, automatic Bleeder Valves and 3-cell Collecting-Blending Flumes; a 36" x 25' Single Screw Fine Material Washer-Classifier-Dehydrator and an 18" x 15' Single Screw Coarse Material Washer-Dewaterer.

While concrete sand is the main fine material produced here, other blends of sand can also be made on demand.

Whether it is Delaware or the Dakotas—New England or New Mexico—wherever there is aggregate that needs beneficiation, Eagle Equipment—backed by 87 years of experience—can do the job better and at lower cost. Get the facts—send for Catalog 58.

SINCE 1872

EAGLE IRON WORKS

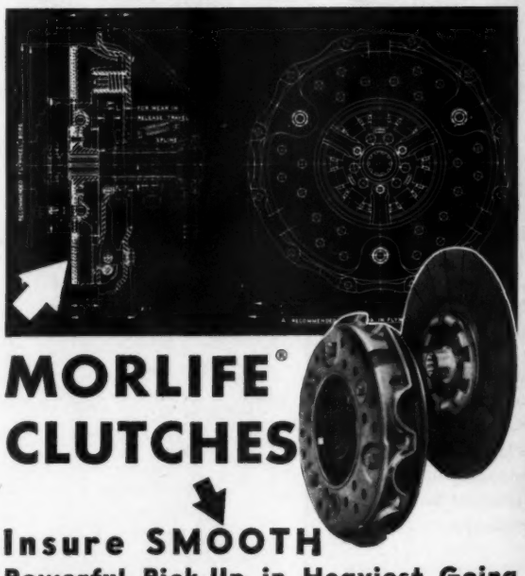
ENGINEERS • MANUFACTURERS

159 Holcomb Ave., Des Moines, Iowa

Factory-Trained Distributors throughout the U. S. and Canada

For more facts, use Request Card at page 18 and circle No. 342

ROCKFORD



MORLIFE® CLUTCHES

Insure SMOOTH

Powerful Pick-Up in Heaviest Going

Compared to previous type friction plates, Morlife® Clutches reduce foot pedal pressure up to 50%. They assure positive engagement—with power-holding grip. Provide a degree of heat resistance and dissipation never before available. They give several times the durability for prolonging clutch life and extend the time between pedal adjustments many times as long.

See us in Booths No. S-1 to S-16 at the Milwaukee S.A.E. Convention

SEND FOR THIS HANDY BULLETIN Gives dimensions, capacity tables and complete specifications. Suggests typical applications.

ROCKFORD Clutch Division BORG-WARNER

314 Catherine St., Rockford, Ill., U.S.A.

Export Sales Borg-Warner International — 36 So. Wabash, Chicago 3, Ill.

CLUTCHES

For more facts, use Request Card at page 18 and circle No. 343

Versatile loader unit in two new models

New International Drott TD-9 and TD-6 Four-in-One Skid-Shovels are now in production, according to an announcement by the International Harvester Co.

The units feature new 6-cylinder diesel engines; increased track length for greater stability and flotation; and newly designed track roller shells increasing lubrication capacity 300 per cent to provide 500-hour lubrication intervals. Available in the International Drott 4-in-1 combination, under one operator's control, are four machine functions—full-sized bulldozer, carry-type scraper, clamshell unit, and Skid-Shovel.

The turbocharged engine of the TD-9 delivers 71 net engine horsepower, and the naturally aspirated TD-6 power plant produces 55 horsepower.

The TD-9 Four-in-One has a bucket capacity of 1½ cubic yards; the TD-6 has a capacity of 1⅛ cubic yards.

For further information write to the International Harvester Co., Dept. C&E, 180 N. Michigan Ave., Chicago 1, Ill., or use the Request Card that is bound in at page 18. Circle No. 139.

New vibrator features impact to 2,200 pounds

The Cleveland Vibrator Co. announces a new dual-motor vibrator geared for synchronous action. Called the Model RC-31, it is said to produce straight-line vibration in any direction.

This unit operates on a rotating eccentric-weight principle and features adjustable eccentrics, permitting the force of vibration to be varied without changing weights. There are four weights, two on each motor, contra-rotating. Variable-impact range is from 640 to 2,200 pounds, and any impact change reportedly can be made in minutes. Because there are no pulleys or belts within this totally enclosed vibrator, operation is practically noiseless, the manufacturer states.

The unit weighs 100 pounds. Its dimensions are 12⅝ inches wide, 12 5/16 inches long, and 7⅛ inches thick. Input is 1,000 watts.

For further information write to the Cleveland Vibrator Co., Dept. C&E, 2850 Clinton Ave., Cleveland 13, Ohio, or use the Request Card that is bound in at page 18 of this issue. Circle No. 80.

Safe-tie with **Cal-Tie Wire**

in convenient reel dispenser

The giant steelman reflects CF&I's policy of improved steel products for all industries, including such "safety first" products as Cal-Tie Wire. The belt-borne dispenser for this quality wire offers these benefits:

- **Safety**—The light, compact dispenser (total weight with wire is 7 pounds or less) leaves hands free . . . eliminates danger of eye and face injuries that result from loose ends of shoulder coils.
- **Economy**—Handy reel allows worker to use exact amount of wire needed . . . ends wasteful practice of discarding odd lengths of wire . . . prevents wire loss resulting from snarled or tangled coils.

Cal-Tie Wire is easy to insert in the dispenser and is available—annealed or galvanized—in gages 14 through 20. For complete details and quick delivery, call your nearest CF&I office.

FREE! Send for new 32-page catalog, "CF&I Steel Products for the Construction Industry".

CAL-TIE® WIRE

THE COLORADO FUEL AND IRON CORPORATION

In the West: THE COLORADO FUEL AND IRON CORPORATION—Albuquerque • Amarillo • Billings • Boise • Butte • Denver • El Paso • Farmington (N. M.) • Ft. Worth • Houston • Kansas City • Lincoln • Los Angeles • Oakland • Oklahoma City • Phoenix • Portland • Pueblo • Salt Lake City • San Francisco • San Leandro • Seattle • Spokane • Wichita
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CF&I OFFICE IN CANADA: Montreal
CANADIAN REPRESENTATIVES AT: Calgary • Edmonton • Vancouver • Winnipeg

6967

For more facts, use Request Card at page 18 and circle No. 344

OWEN BUCKETS

new center line reeving doubles cable life

"Our new OWEN Bucket is great. That new center line reeving more than doubles our cable life," says Kenneth Muster, Supt. for R. F. Muntz, owner of the Hugo Sand and Gravel Co. of Kent, Ohio.

The tandem positioning of the lower closing sheaves permits the closing line lead to pass directly through the center of the head of the bucket. This exclusive OWEN feature eliminates excessive bending of the cable, resulting in increased cable life experienced by Hugo Sand and Gravel. It also permits the bucket to hang plumb from the crane boom.

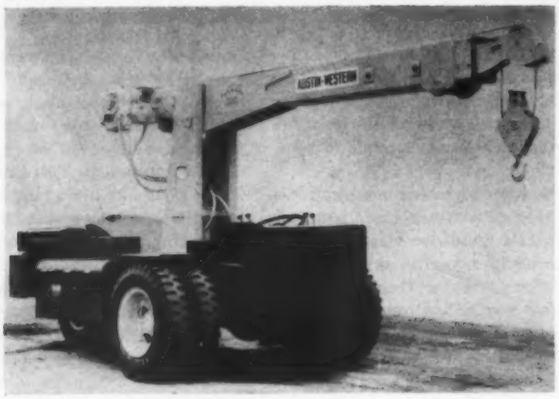
"Our operation is tough on a clamshell, but all these improved OWEN features have greatly reduced our maintenance costs and cut down-time," claims Mr. Muster.

This OWEN Clamshell, with all moving parts lubricated . . . with all arm and sheave pins, plus the main shaft, having triple lip grease seals . . . has heavily cut the high maintenance expense of handling this sand suspended in water that comes directly from the wash plant.

Send us your requirements.
OWEN Engineers are at your service at all times.

The OWEN BUCKET Co.
BREAKWATER AVENUE, CLEVELAND 2, OHIO
BRANCHES: New York • Philadelphia • Chicago
Berkeley, Calif. • Fort Lauderdale, Fla.

For more facts, use Request Card at page 18 and circle No. 345



The tricycle chassis on the new Austin-Western Model 110 hydraulic crane provides high maneuverability in close quarters.

Versatility is feature of three-wheel crane

Four basic options are available to tailor the Austin-Western Model 110 self-propelled crane to any crane job in the 3 to 5-ton range.

The chassis of the Model 110 is of conventional 3-wheel design with dual front driving wheels and a single rear power-booster steerable wheel of the trunnion type. All wheels have pneumatic tires.

The simplest version has a hydraulic cable hoist and requires manual boom topping. This boom will lift just over 5,000 pounds at 7 feet ahead of the bumper and 10,000 pounds at a distance of 2 feet ahead of the bumper. Longer reach and greater capacity are obtainable with a more advanced boom equipped with hydraulic boom topping and a 6-foot manual or power boom extension.

Another version of the machine has a hydraulically operated telescoping boom that extends horizontally from 7 to 13 feet. Cable hoist, boom topping, and telescoping of the boom are all hydraulically controlled from the operator's seat.

The Model 110 is also available with an optional swing mechanism that is completely hydraulic and rotates the boom through 220 degrees.

For further information write to Austin-Western, Baldwin-Lima-Hamilton Corp., Dept. C&E, Box 208, Aurora, Ill., or use the Request Card at page 18. Circle No. 49.

Masonry drilling rigs offered in new line

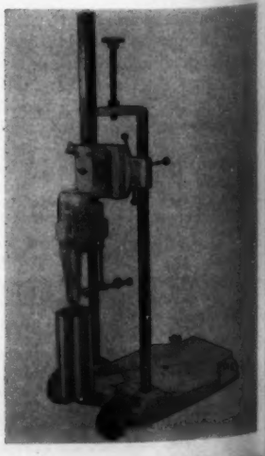
Diamond Products, Inc., announces five new diamond masonry drilling rigs as part of its Core-Bore drilling system.

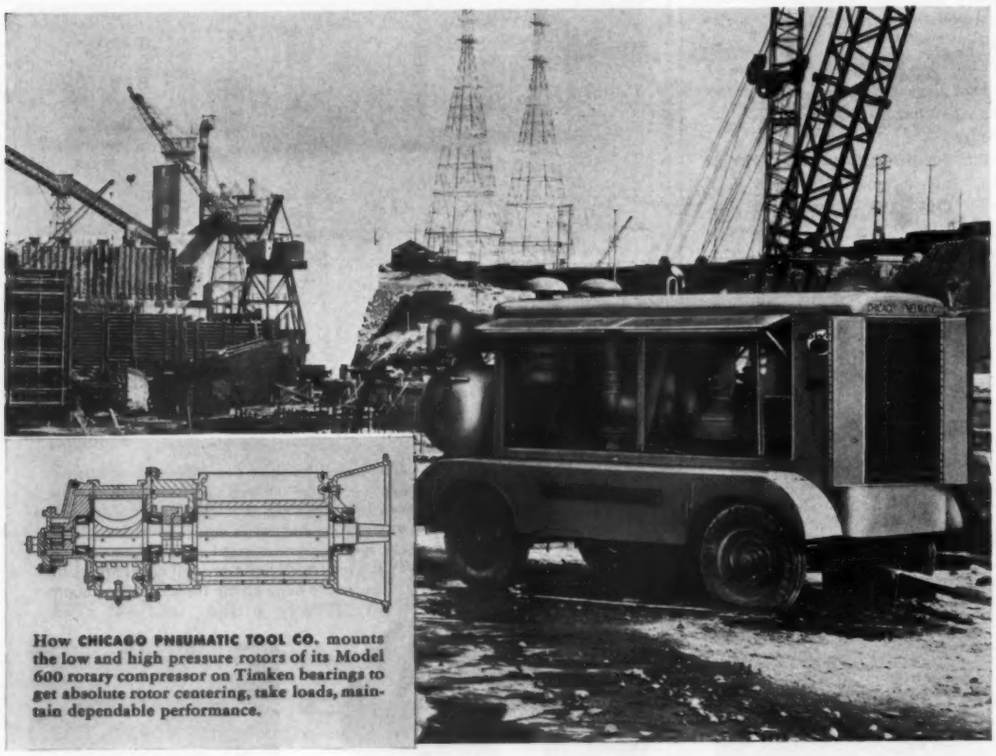
Known as Drillmaster rigs, the units are said to be exceptionally versatile; more powerful yet lighter in weight for portability; and faster cutting with longer bit life.

Features include dual posts for extra rigidity, rack and pinion for more controllable feed and fast extraction of bit, swivel head for horizontal or angle drilling without changing platform, and the ability to drill extra close to corners.

Designed for drilling through steel-reinforced concrete and materials ranging in hardness from cinder block to toughest granite, the new Drillmaster machines are available in light, medium, heavy, and extra-heavy design.

For further information write to Diamond Products, Inc., Dept. C&E, 333 Prospect St., Elyria, Ohio, or use the Request Card at page 18. Circle No. 140.





How CHICAGO PNEUMATIC TOOL CO. mounts the low and high pressure rotors of its Model 600 rotary compressor on Timken bearings to get absolute rotor centering, take loads, maintain dependable performance.

Today contractors get dependable air power—compressor gets perfect rotor centering with TIMKEN® bearings

CHICAGO Pneumatic Rotary Compressors prove themselves to be real workhorses when "killing" construction jobs demand around-the-clock performance with no room for failure. One of the reasons for their success is that Timken® tapered roller bearings keep them rolling.

Each cylinder of these two-stage compressors contains a high-speed rotor that must be perfectly centered between its end plates, and end plate clearances are close. Timken roller bearings prevent any axial movement, yet take radial and thrust loads in any combination.

Timken bearings virtually eliminate friction. They're geometrically designed to have true rolling motion, and precision-made to live up to their design. They make closures more effective, too. Dirt, dust and moisture can't get in; lubricant can't get out. Maintenance is further reduced.

So to get your No.1 bearing value, specify bearings trade-marked "TIMKEN". They make any machine better, because Better-ness rolls on Timken tapered roller bearings. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ont. Cable address: "TIMROSCO". *Makers of Tapered Roller Bearings, Fine Alloy Steels and Removable Rock Bits.*

This symbol on a product means its bearings are the best.

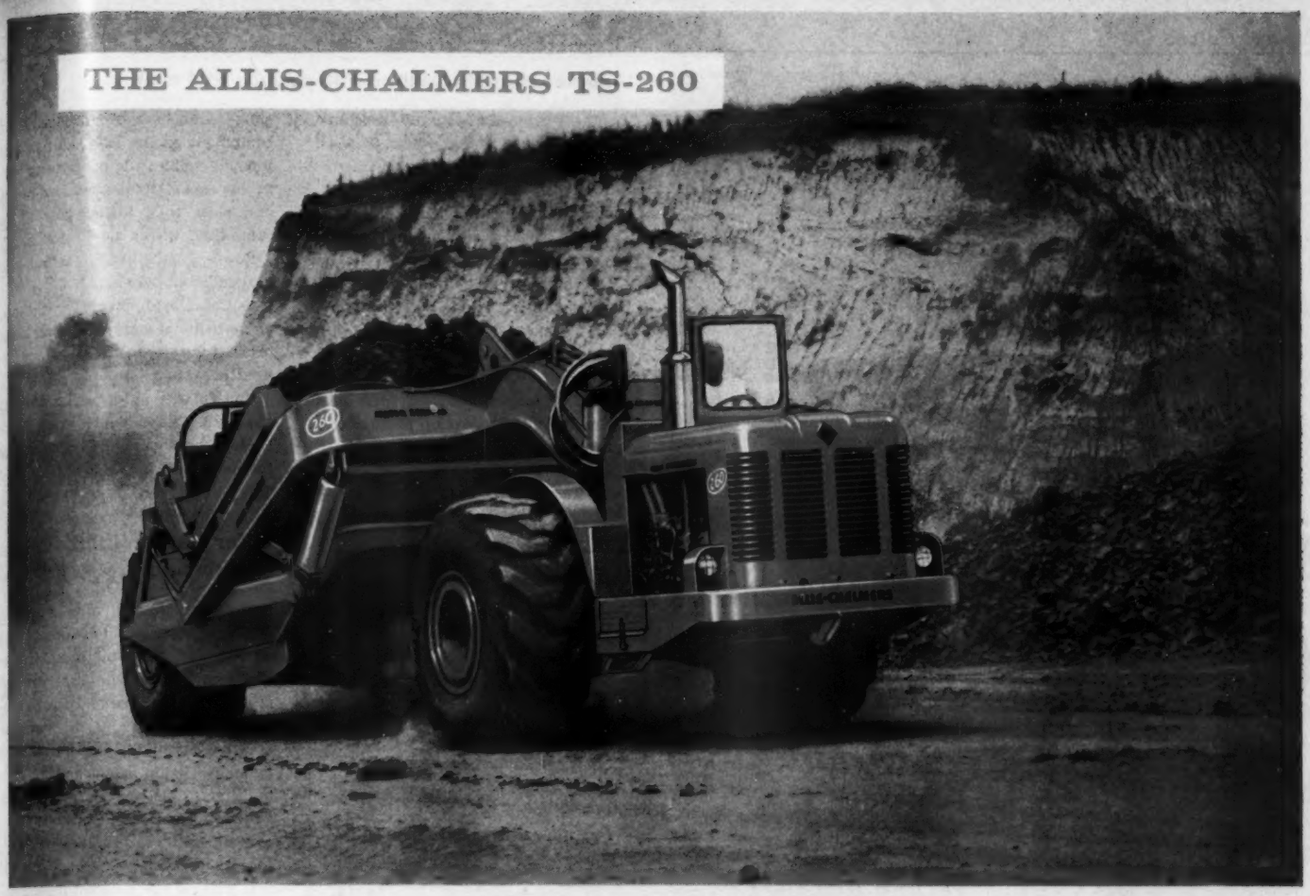
BETTER-NESS rolls on

TIMKEN®

First in bearings for 60 years

tapered roller bearings

For more facts, use coupon or Request Card at page 18 and circle No. 346



Eats Up Big Yardage Faster than Anything in its Class

All over America, the 17-cu-yd TS-260 in action is convincing construction men that here's the top dirt hog in the medium-sized motor scraper field. It'll convince you, too—with its profit edge in horsepower, rimpull and exclusive positive penetration at the cutting edge.

One of the most commanding features of the TS-260 is its new Allis-Chalmers 16000 engine. This big, new power package delivers 230 horsepower at 2,000 rpm . . . more than 18 horsepower per struck yard of capacity . . . up to 12 percent more than most other units of comparable size. The 16000 engine also offers unmatched efficiency and fuel economy—result of controlled turbulence produced by a combustion system unique in the construction machinery field. There's over 30,000 pounds of rimpull in low gear . . . up to 25 percent more pull than others in the 15-yard class at normal loading speeds.

Only Allis-Chalmers offers positive hydraulic down pressure on the cutting edge. In the loading cycle, this means fast, easy penetration even into hard-packed material for big 17-cu-yd loads. Double-acting scraper jacks also provide full power for rapid lifting of loaded scraper bowl. Result—faster getaways for loaded scrapers, faster work cycles.

When the ground gets soft or muddy, KON-TORK differential automatically goes to work *shifting power from the wheel that slips to the wheel that grips* . . . enables the TS-260 to walk right through axle-deep mud if it has to. KON-TORK differential also permits normal steering and complete control of the unit when varying torque is being delivered to drive wheels.

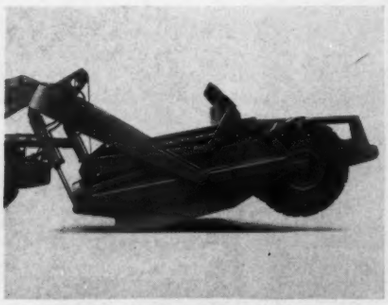
The TS-260 is loaded with other important performance and production advantages, too. Original, low, wide bowl with curved bottom reduces loading resistance . . . speeds loading cycles. Smooth 90-degree turning ability permits 180-degree turns in less than 31 ft . . . an air-actuated transmission brake lets operators upshift swiftly and surely without double clutching.

Your Allis-Chalmers dealer will be glad to show you all of the high-performance features on the TS-260 . . . and to prove their worth in an actual demonstration on your job. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.

The TS-260 has powered its way into leadership . . . in performance, dependability, profit for its owners

The TS-260's 230 horsepower provides more than 18 horsepower per struck yard . . . 30,000 pounds of rimpull at 1.9 mph.

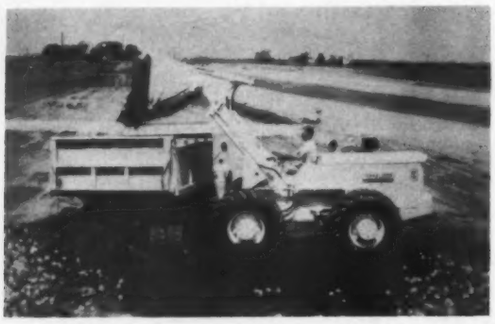
KON-TORK is an Allis-Chalmers trademark.



The TS-260 is the only scraper in its class to offer positive down pressure on the cutting edge for fast, easy penetration into hard-packed materials.

move ahead with ALLIS-CHALMERS . . . power for a growing world

For more facts, use Request Card at page 18 and circle No. 347



Faster digging and greater earthmoving capacity are claimed for the new Case Model W-10 4-wheel-drive Terraload'r. The 2-cubic-yard machine features a carry capacity of 6,500 pounds at 4 mph.

Tractor shovel carries 6,500 pounds at 4 mph

The Terraload'r Model W-10 is announced by the J. I. Case Co. This 4-wheel-drive, rear-wheel-steer tractor shovel has a carry capacity of 6,500 pounds at 4 mph. Standard bucket size is 2 cubic yards; there is also a 1¼-cubic-yard heavy-duty bucket. A 2⅞-cubic-yard light-materials bucket is optional. Lift capacity at 0 mph is 13,000 pounds.

An important feature of the W-10 is its power-to-weight ratio; the addition of torque-converter drive enables the unit to develop tremendous push-power with a minimum of wheel slippage.

Full power steering and power-shift transmission are standard equipment on the W-10. A new shift linkage enables the operator to work in low gear, then reverse direction and shift to a higher gear at the same time, with a single motion.

Power is supplied by a Case-built 6-cylinder diesel engine.

Optional equipment for the machine includes snowplow, dozer blade, brush rake, high-lift arms, and all-weather cab.

For further information write to the J. I. Case Co., Dept. C&E, 700 State St., Racine, Wis., or use the Request Card at page 18. Circle No. 70.

Offer new multiphase additive for concrete

Multiwet No. 50, a new concrete additive reported to improve the quality and workability and reduce the cost of concrete has been developed by the Deynor Corp.

According to the manufacturer, the additive is a highly concentrated and balanced liquid compound of basic multiphase wetting elements that is added to the dry concrete mix, at the rate of 4 ounces per cubic yard, before the mixing water is added. It first acts on the inherent moisture in the aggregates and then on the added mixing water, thus hydrating the cement and wetting the aggregate.

About 15 per cent less water is required for the same slump; better plasticity is attained, resulting in more workable concrete; strength is increased; and air entrainment results, the company reports.

For further information write to the Deynor Corp., Dept. C&E, 1 Depot Plaza, Mamaroneck, N. Y., or use the card at page 18. Circle No. 58.

125 TONS at 17′ radius
Greatest lift capacity on crawlers

NEW MANITOWOC model 4000 crane

Another first from Manitowoc — the world's only crawler crane with a huge 125 ton lifting capacity! Here's power to make the heaviest lifts with ease — stability to poke booms way up. ■ Look under the powerful new Manitowoc 4000 and you'll find a heavy, massive rotating base with huge hook and house rollers for fast, smooth swings carrying the heaviest loads. The big, stable undercarriage and long, wide-spread crawlers provide a solid lifting foundation. ■ Look *inside* the Model 4000 and you'll find the big, double drum boom hoist that powers loads up *and* down. Boom hoist is self-locking worm gear type that cannot "free wheel". On the rugged main drum the job-proved external brake and internal clutch friction arrangement assure positive control when placing heavy iron sky high. Extra-friction surface, disc-type swingers provide instant response to the operator's touch. Both manual or full air controls are available. ■ To meet any lifting requirement, there is a full range of boom lengths and jibs. The basic boom supplied with the rig is a new Manitowoc "T" section boom 70′ long, available with inserts of 10′, 20′ and 30′. For those really high, lightweight lift jobs, extra long booms and jibs in the 300′ range provide real "sky hook" reach. ■ You'll want more information on the new Model 4000. Get it now from your Manitowoc distributor, or write to the Manitowoc Engineering Corp., Manitowoc, Wisconsin.

Manitowoc

MANITOWOC ENGINEERING CORP.
(A subsidiary of The Manitowoc Company, Inc.)
MANITOWOC, WISCONSIN

CRANES 25 TON - 125 TON | SHOVELS 1¼-YD. - 5½-YD. | DRAGLINES 1¼-YD. - 6-YD. | TRENCH HOES 1¼-YD. - 3-YD.

For more facts, use Request Card at page 18 and circle No. 348

To Keep Power Equipment Running To Stand Guard on the Job . . .

THE ANSWER IS Anthes

The WEATHERCAP®

Rain cannot get in a vertical exhaust protected by Weathercap. Range of sizes to fit 1" to 6⅛"O.D. Fully automatic

OPENS at the first touch of exhaust pressure, CLOSES the instant the engine stops . . . Now standard equipment on over 35 nationally known names in tractors and powered equipment.

The FLAME-GUARD Construction Torch

New self-righting torch with an exclusive square-type burner which STAYS LIT in the worst weather . . . Burning time of 24 to 48 hours . . . Quality Anthes construction throughout.

Get the full answers and literature from

Anthes Co.
FORT MADISON, IOWA

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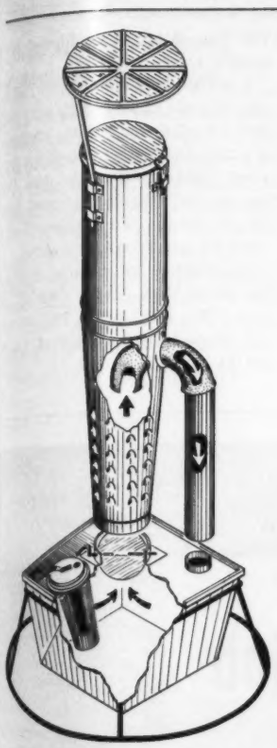


New salamander produces 150,000 Btu's per hour

An oil-burning salamander that produces over 150,000 Btu's per hour is announced by the West Coast Steel Products Co.

Designated Universal, the unit is said to be highly portable and easy to handle and operate. It weighs only 25 pounds.

This salamander uses ordinary fuel, diesel oil, or kerosene and operates up to 20 hours on one filling. An improved return-gas principle effects smokeless operation, according to the manufacturer.

For further information write to the West Coast Steel Products Co., Dept. C&E, 3120 Fifth St., Riverside, Calif., or use the Request Card at page 18. Circle No. 68.

Tool device permits faster form erection

Chesley Industries, Inc., announces a device called Lev-A-Lok, said to permit faster and better erection of forms for sidewalks, driveways, and other jobs using 4-inch forms.

The unit is a combination steel stake and clamping tool with built-in stake puller, made of rustproof steel. The clamping part fits any standard 2×4, and holds splices firmly. Forms can be locked at any height and held rigid throughout the entire job.

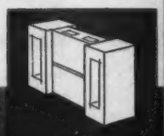
Lev-A-Lok has no parts to wear out, nails are eliminated, and forms last much longer, according to the manufacturer. Standard size is equipped with 18-inch stakes; 24-inch stakes are available.

For further information write to Chesley Industries, Inc., Dept. C&E, 24777 Telegraph Road, Detroit 41, Mich., or use the Request Card that is bound in at page 18. Circle No. 37.

For more facts, circle No. 350→

Power is taken from a flywheel drive on this new Rocket transit mixer. A driving pulley is installed next to the flywheel, with the flywheel housing constructed so that a large blister supports the driven rubber belt, in which there are embedded 21 small multiple-strand steel cables. Power is picked up from the output shaft at the blister by a universal-joint drive shaft to the mixer gear mechanism. According to the manufacturer, the machine will carry legal loads, with a 6-yard mixer, of from 5½ to 6½ cubic yards, depending upon the load limits of the respective state. For further information write to the **Concrete Transport Mixer Co.**, Dept. C&E, 4985 Fyler Ave., St. Louis 9, Mo., or use the Request Card at page 18. Circle No. 71.

Great new things are shaping up in concrete block



Architect Marcel Breuer, New York, alternated hollow-core units and standard 4" x 8" x 16" concrete blocks to create this striking masonry wall. PHOTO COURTESY NATIONAL CONCRETE MASONRY ASSOCIATION.

Atlas Masonry Cement provides the right mortar

Concrete blocks in a range of new designs . . . colors . . . and textures are being used to create unusual and distinctive effects in masonry construction. For structural or decorative use, indoors and out, the economical concrete block is now a major design element in today's building plans. And to lay up these new concrete masonry units, Atlas Masonry Cement continues to be the preferred basic material for mortar. It helps produce a smooth, workable mix . . . assures a stronger bond . . . gives weathertight joints that are uniform in color . . . complies, too, with ASTM and Federal Specifications. For information, write: Universal Atlas Cement, Dept. M, 100 Park Avenue, New York 17, N. Y.

USS **Universal Atlas Cement Division of United States Steel**

M-77

"USS" and "Atlas" are registered trademarks

OFFICES: Albany · Birmingham · Boston · Chicago · Dayton · Kansas City · Milwaukee · Minneapolis · New York · Philadelphia · Pittsburgh · St. Louis · Waco

The Model TJ-254 Jaques hydraulic earth auger drills easily at a 30-degree angle.

Offer improved line of hydraulic drills

Successful completion of rigid on-the-job tests of a completely re-engineered line of Jaques hydraulic earth augers has been announced by Texoma Enterprises, Inc.

Five different models of the self-contained, completely hydraulic hole digger can be quickly mounted on standard trucks or Jeeps. The machines are said to speedily drill holes 9 to 72 inches in diameter and up to 25 feet deep, in any kind of soil or rock. They operate efficiently from any position up to a 45-degree angle, from either side of a truck, according to the manufacturer.

Speeds of the hole-digging machines have been substantially increased, extra-reserve ruggedness has been built in at all stress points, and minimum operation and maintenance costs are claimed by the company.

For further information write to Texoma Enterprises, Inc., Dept. C&E, Hiway 75 North, Sherman, Texas, or use the Request Card at page 18. Circle No. 42.

Submersible pump yields 44 gpm from 150 feet

A new submersible pump is available from the Continental Pump Co.

Incorporating the helical screw principle—a single corrosion-resistant rotor turning within an abrasion-resistant stator—the Spirit reportedly handles more water from greater depth with less horsepower.

The pump is a 1/3-hp unit available with 115-volt or 230-volt, single-phase, 60-cycle motor. It yields 44 gpm from 150 feet against 40 pounds tank pressure. According to the manufacturer, it is easy to install in 4-inch-diameter, and larger, wells. Simple in design yet ruggedly built, it performs in varying water levels without adjustment.

For further information write to the Continental Pump Co., Dept. C&E, 1027 S. Vandeventer Ave., St. Louis 10, Mo., or use the Request Card at page 18. Circle No. 22.

Aid to burning waste in land clearing

A new kind of equipment for use in land clearing has been announced by Fleco Corp. Called the Model FFP Fire Fan, the new unit forces fast, complete burning of brush, stumps, and debris in piles or windrows—even when the material is wet.

The Fire Fan is powered by a Briggs & Stratton 3-hp air-cooled engine that turns a 24-inch 6-blade fan, producing an air velocity up to 32 mph. Adjustable vents permit the full flow of air to be directed to a specific area.

A self-priming pump sprays fuel oil onto the pile in a carefully controlled flow for additional burning efficiency. A nozzle and 21 feet of hose are supplied. Skid-mounted, the Fire Fan can be easily hauled or towed from pile to pile and can be mounted on a truck for greater maneuverability.

For further information write to the Fleco Corp., Dept. C&E, P. O. Box 2370, Jacksonville, Fla., or use the Request Card at page 18. Circle No. 54.

Match the truck to the job

Matching the right equipment to the job is one way successful contractors stay on top in today's highly competitive construction market.

Campanella & Cardi Construction Co., of Hillsgrove, Rhode Island, one of New England's leading contractors, knows that hauling costs go down when trucks are matched to the job. That's why you'll find models for every type of construction job always available in their 100-Mack fleet . . . models like these Mack LVX 22½-tonners used to handle the bridge approach work on their recent Fall River, Mass., expressway project.

Mack offers the most complete line of dumpers for mining, quarrying, road building, construction . . . from heavy-duty 150-horsepower, four-wheel dumpers with 5- to 10-yard capacities, to super-duty 450-horsepower, six-wheel dumpers with 40-ton capacities . . . each with the built-in capacity, dependability and economy traditional with Mack trucks.

See your Mack branch or distributor for full details on the models best suited to your requirements. Mack Trucks, Inc., Plainfield, New Jersey. In Canada: Mack Trucks of Canada, Ltd., Toronto, Ontario.

7201

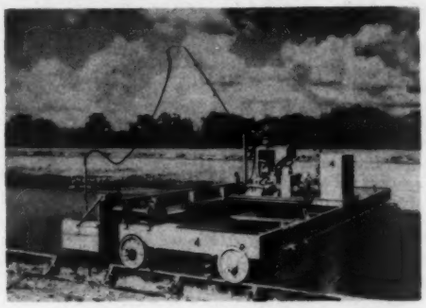
MACK
FIRST NAME FOR
TRUCKS

There are Macks for every construction job. Here are 35 of Campanella & Cardi's 100-Mack fleet ready to tackle a new assignment.

Spray curing machines in four standard sizes

An improved automatic Rex spray curing machine is announced by the Construction Machinery section of the Chain Belt Co. It is adapted to automatic belting and brooming operations and it is fitted for an optional burlap drag attachment.

The machine's positive displacement pump delivers a uniform flow of curing compound, and a bypass system returns overflow to a storage drum. Its spray head is operated by a hydraulic V-belt drive independent of travel speed.



A major feature of the Rex spray curing machine is an adjustable frame with simple clamping devices that eliminate the use of nuts and bolts, permitting quick width adjustments.

The unit is powered by a 2-cylinder, 12-hp air-cooled gasoline engine with a 4-speed transmission.

Rex spray curing machines are available in four standard sizes with frame adjustment ranges of 10 to 15, 12 to 25, and 20 to 32 feet.

For further information write to the Construction Machinery section, Chain Belt Co., Dept. C&E, 4701 W. Greenfield Ave., Milwaukee, Wis., or use the Request Card at page 18. Circle No. 66.

Concrete-block machine for job-site production

A compact vibrating machine for rapid on-the-job production of all standard sizes of concrete block and brick is announced by the General Engines Co., Inc.

Easily transportable from one location to another, the machine is equipped with either electric motor or gasoline engine; it can also be operated manually. It is simple to operate, and the few moving parts involved are standard units, easily replaceable. Mold boxes are furnished for special sizes and shapes.

For further information write to the General Engines Co., Inc., Dept. C&E, Rt. 130, Thorofare, N. J., or use the Request Card at page 18. Circle No. 100.

Offer additional power in 24-yard scraper

Current production units of the Euclid Model TS-24 scraper are powered by two General Motors diesel engines providing a total of 563 horsepower—representing an increase of 45 horsepower over the former model. The tractor axle is powered by a 336-hp engine, and a 227-hp diesel is mounted at the rear to drive the scraper wheels.

Each of these engines has a separate Torqmatic drive consisting of torque converter and semiautomatic transmission.

The TS-24 has a struck capacity of 24 yards; rated payload at 1 to 1 slope is 32 yards.

For further information write to the Euclid Division, General Motors Corp., Dept. C&E, 1361 Chardon Road, Cleveland, Ohio, or use the Request Card at page 18. Circle No. 61.

←For more facts, circle No. 351

In excess of 400 tph of primary crushed stone was produced by this portable Universal 4650 Impact Master for the Rochester, Minn., construction firm of Quarve & Anderson. The nonclog features of the Impact Master and Universal wobbler feeder kept production level at full capacity, rain or shine. On this particular contract for 130,000 tons of road stone on Minnesota's Route 30, the Quarve & Anderson firm reduced its 60-day deadline by three weeks because of this equipment. For further information write to the **Universal Engineering Corp.**, Dept. C&E, 625 C Ave. N. W., Cedar Rapids, Iowa, or use the Request Card at page 18. Circle No. 141.

Automatic road builder does most blading work

An automatic road builder said to handle virtually every blading job from the scraper to the paver is offered by the Gurries Mfg. Co.

Grade is maintained from a specially designed automatic 44-foot wheelbase. Cross slope is held by a fully hydraulic automatic pendulum control. Both blade height for grade and cross slope are set on large dials by the operator. The machine is accurate to 1/25 inch in 15 feet, according to the manufacturer.

The unit has a 13-foot blade, 16-cubic-yard bowl capacity, and weighs approximately 28,000 pounds. It also

Electric concrete grinder mounted on skid base

The Stow Mfg. Co. offers a new portable electric concrete grinder called the Model JT50A.

The unit has a ¾-hp 3,450-rpm motor that is totally enclosed to prevent any damage from concrete dust. The motor is mounted on a skid base to make it easier to pull along as the operator works. An 8 or 12-foot ½-inch-diameter flexible shaft transmits the power to a wet or dry anglehead.

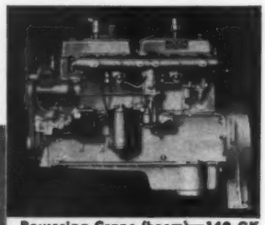
Wet angleheads are furnished for wet rubbing with reduction gearing of 18:1, 10:1, 8:1, or 5:1, as well as an attachment that permits the operator to eject water through the grinding wheel (or disk) on to the concrete when required. Dry angleheads for dry grinding are also available with a 1:1 ratio.

For further information write to the Stow Mfg. Co., Dept. C&E, 40 Shear St., Binghamton, N. Y., or use the Request Card at page 18. Circle No. 89.

For more data on any item, circle indicated number on card at page 18.

77,300 lbs

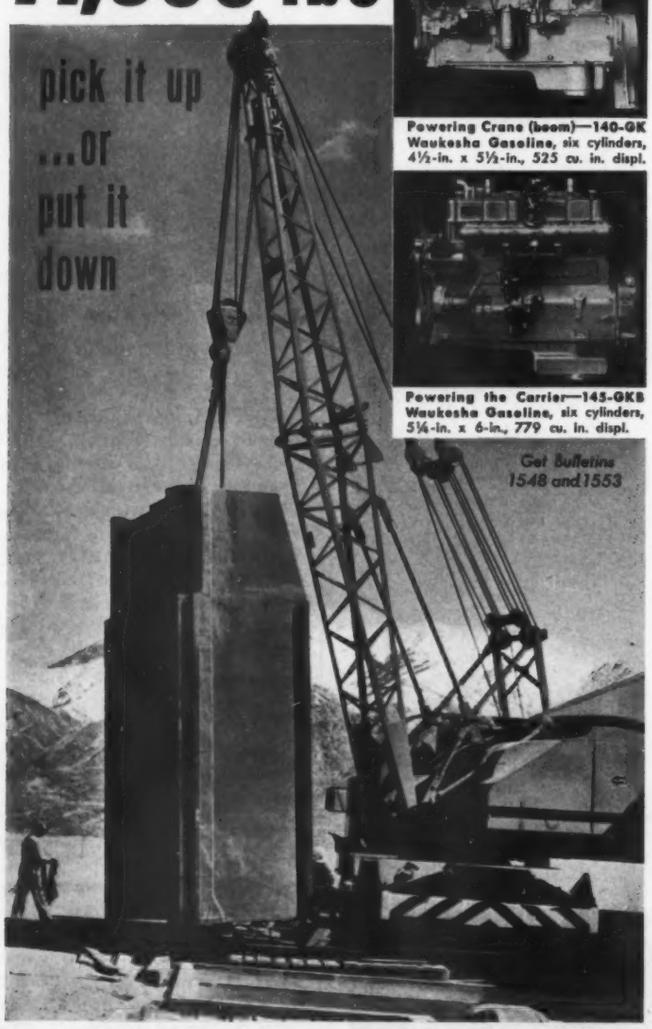
pick it up ...or put it down



Powering Crane (boom)—140-GK Waukesha Gasoline, six cylinders, 4½-in. x 5½-in., 525 cu. in. displ.

Powering the Carrier—145-GKB Waukesha Gasoline, six cylinders, 5¼-in. x 6-in., 779 cu. in. displ.

Get Bulletins 1548 and 1553



77,300 lb. section of press, for fabricating Bomarc surface to air missile parts, was picked up with 40' boom at 18' radius over the side and swung to rear, boomed out to 24' radius and lowered 10' to its base. Waukesha 140-GK engine with torque converter powers crane boom.

INSLEY TRUCK CRANE does it with

WAUKESHA POWER

WAUKESHA MOTOR COMPANY, WAUKESHA, WISCONSIN

NEW YORK TULSA LOS ANGELES

Factories — Waukesha, Wisconsin, and Clinton, Iowa

437

For more facts, use Request Card at page 18 and circle No. 352

WET JOB?

whether

POWER PLANT

or other wet work—

for "quick dry"...specify...

GRIFFIN

WELLPOINT CORP.

SALES • RENTAL • CONTRACT

881 E. 141st St., New York 54, N. Y.

Hammond, Ind. • Jacksonville, Fla.

Houston, Tex. • W. Palm Bch., Fla.

For more facts, circle No. 353

"GJ-BOSS"

GROUND-JOINT FEMALE COUPLING, STYLE X-W

SO *Reliable* FOR PILE DRIVING

...AND ANY STEAM, AIR, WATER AND HYDRAULIC SERVICES...

HIGH OR LOW PRESSURE

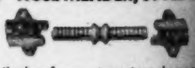
Washerless

Unequalled for safety, efficiency and long service life. Ground-joint union between stem and spud provides leak-proof, trouble-free seal . . . no lost or worn-out washers to replace. All parts malleable iron or steel, rustproofed. Furnished with superstrong "Boss" Offset and Interlocking Clamps. Sizes ¼" to 6", inclusive.

COMPANION MALE COUPLING "BOSS" STYLE MX-16

Companion coupling for "GJ-Boss", described above, and "Boss" Washer Type Couplings Style W-16. Each size fits same size hose . . . oversize hose not required. Furnished with "Boss" Offset and Interlocking Clamp. Sizes ¼" to 6", inclusive.

"BOSS" HOSE MENDER, STYLE BM-16



The practical, safe way to restore damaged hose to service. Fitting consists of corrugated metal tube and two "Boss" Interlocking Clamps. Tube has flanges to engage clamp fingers. Thoroughly rustproofed. Sizes ½" to 6"

Stocked by Manufacturers and Distributors of Industrial Rubber Products

DIXON Valve & Coupling Co.

GENERAL OFFICES & FACTORY—PHILADELPHIA

BRANCHES—CHICAGO · BIRMINGHAM · LOS ANGELES

DIXON VALVE & COUPLING CO., LTD., TORONTO

For more facts, circle No. 354

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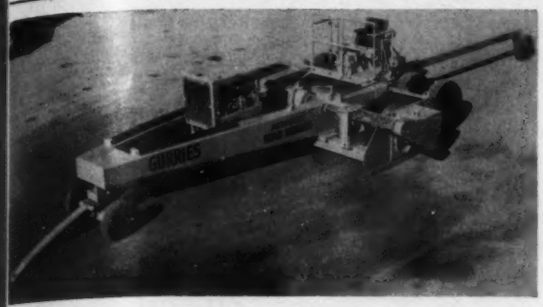


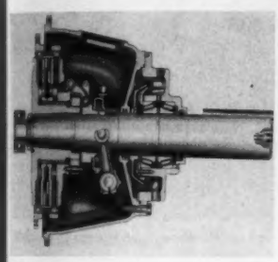
The Gurries machine is designed to replace a variety of blading machines on spreading, rough-grading, and finish-grading operations.

features a 20-inch-diameter conveyor screw set laterally in the bowl for balancing the load in the bowl in spreading operations or for side casting into a windrow.

For further information write to the Gurries Mfg. Co., Dept. C&E, 1720 S. First St., San Jose 12, Calif., or use the Request Card at page 18. Circle No. 7.

Power takeoff available for crushers, conveyors

A new power takeoff for high-energy, high-speed applications is announced by the Twin Disc Clutch Co.



Designated Model IBF-214P, this unit is especially suited to rock crushers, conveyors, and other equipment that must start under heavy loads. It is said to withstand high-energy heat loads; to be applicable to high-speed engines up to 3,380 input rpm; and to operate up to six months between lubrication periods.

For further information write to the Twin Disc Clutch Co., Dept. C&E, Racine, Wis., or use the Request Card at page 18. Circle No. 2.

Hand tools for tires on off-the-road units

A new line of hand tools, designed for easy maintenance of tires on off-the-road equipment, is available from the Dill Mfg. Co.

Eight models are included: a hex valve cap tool, a valve-stem refacer, two models of valve-stem rethreaders, a valve-stem reseater, screw driver, valve inside extractor, and a screw-driver valve cap tool.

According to Dill, the tools are of particular value where a valve is located in a difficult position.

For further information write to the Dill Mfg. Co., Dept. C&E, 700 E. 82nd St., Cleveland 3, Ohio, or use the Request Card at page 18. Circle No. 86.

For more facts, circle No. 355→

Spooling attachment for tractor crane

A free-spooling load-drum attachment for the International Superior TD-9 swing crane is announced by the International Harvester Co.

Available as a field attachment or as a factory-installed item, the free-spooling load-winch assembly is said to turn the crane into an ideal tool for handling utility poles, pipe, and other cumbersome items.

The free spooling can be used whenever it is desired to overhaul the drum. Controlled from the operator's seat, the attachment is driven by positive jaw clutches for maximum safety.

For further information write to the International Harvester Co., Dept. C&E, 180 N. Michigan Ave., Chicago 1, Ill., or use the Request Card that is bound in at page 18 of this issue. Circle No. 142.

NEW-

Tow it into place

. . . Weir Contracting Co. tows their Heltzel Unitized, Mobilized Batching plant from previous job site on its own transportation wheels . . .

Heltzel's new 100 and 150-ton, pushbutton batching plants are now *unitized* and *mobilized* for easier moving—for faster setup—for greater savings of time and money.

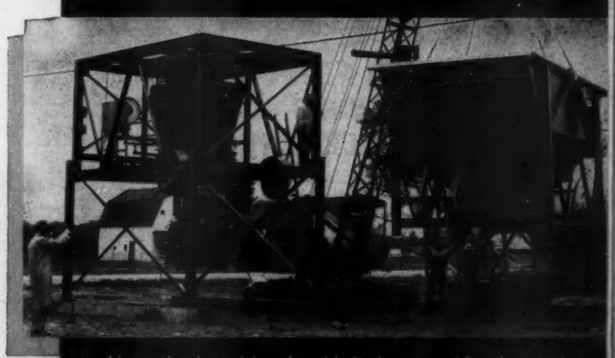
The new plant consists of two self-contained mobile sections; hopper section and batcher section (including scales) with new fold-up supporting columns. Both sections have built-in wheel assemblies and towing tongues—ready to roll.

Weir Contracting Company of Detroit, Michigan reports: "... Our first job was in Greenbrier Meadows Subdivision, Livonia, Michigan. After the plant arrived on the site it was ready for operation in a very few hours. We found that the speed of batching will give two complete batches in thirteen seconds. On subsequent work, the plant was dismantled and ready for transportation in two hours and towed by small, single axle dump trucks to the new location. We have found that the built-in transportation wheels save us over $100.00 a move because of not having to rent trailers."

For complete data and specifications contact your nearby Heltzel representative—or write us direct.

Set it up fast

. . . batcher section is raised into position, hinged columns are lowered and bolted in place . . .

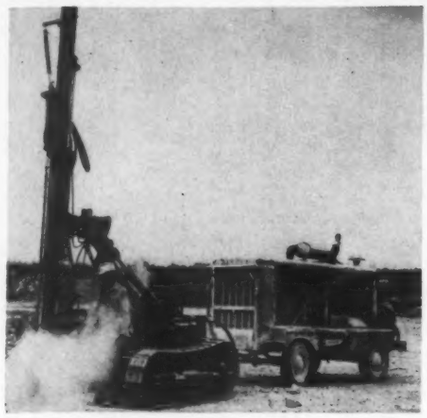


. . . bin section is positioned and bolted on top of batcher section

Start batching

In just a few hours this full size, high capacity, pushbutton paving plant is ready to operate!

THE HELTZEL STEEL FORM AND IRON COMPANY
WARREN, OHIO



Hydraulic positioning of the drill mast on the new Thor TR-5 permits drilling at any angle required.

Hydraulic mast control on new track-type drill

Push-button hydraulic power positioning of the drill mast, with the possibility of increasing the drilling rate 2 to 3 times, is featured on a new self-propelled tractor-type rock-drilling rig available from the Thor Power Tool Co.

Fingertip movement of five levers on the new Thor TR-5 crawler rig enables the operator to power-position the drill mast through 10 hydraulic movements, permitting swinging, sliding, raising, and lowering of the mast to meet any vertical, horizontal, or angular drilling requirement, the manufacturer reports.

The TR-5 is standard-equipped with a new Thor 140 4½-inch [illegible] drifter, a power-feed mast for 18-[illegible] steel changes, and a self-propelled tractor-type chassis driven by a compact new Thor 8-hp twin air motor.

Drilling speeds up to one foot a minute in putting down 3½-inch diameter holes 40 feet deep in [illegible] limestone have been achieved in [illegible] tests, according to the company.

For further information write to the Thor Power Tool Co., Dept. C&E, 175 N. State St., Aurora, Ill., or use the Request Card at page 18. Circle No. 47.

TIME SAVED TWICE! with SYLGAB

Continuous BAR BOLSTER SUPPORTS

1. The right material at the right time. No delays due to late delivery or mixed-up shipment.
2. Designed for speedy, easy installations. Allows fast pouring due to high rigidity.

A RUGGED SUPPORT FOR SLAB REINFORCEMENT

Made in 5' lengths of hard steel wire supporting bar with wire legs spaced either standard 5" distance or directly under each slab rod (4" min.)

•

Member Concrete Reinforcing Steel Institute

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Manufacturers of Steel and Wire Accessories for Concrete and Fireproof Construction.

SYLGAB STEEL & WIRE CORP

79-05 Cooper Ave., B'klyn 27, N. Y.

BEAM CLIPS • SPECIAL COLUMN CLIPS
EXPANSIBLE CLIPS
STRAIGHT AND COIL WIRE
HAIRPIN CLIPS • TOGGLE HANGERS
FORM SPACERS • BAR ACCESSORIES

Request Catalog—Phone or Wire Collect

For more facts, circle No. 356

New line of clothing for welders' protection

A new addition to its line of welders' protective clothing has been announced by American Optical Co.

The new garments are made from a special dark brown, soft-grain leather that is not only light and flexible but is said to offer excellent protection from harmful heat rays. The new clothing protects welders on gas-shielded electric welding operations where argon, helium, and similar gases are used.

For further information write to the American Optical Co., Safety Products Division, Dept. C&E, Southbridge, Mass., or use the Request Card at Page 18. Circle No. 41.

Formed-seat joist hangers have big load capacities

The Simpson Co. announces the addition of a new, formed-seat joist hanger to its Strong-Tie construction-accessories line.

According to the manufacturer, the hangers have vertical and torsional load capacities ranging up to 3,200 pounds. Formed of 18-gage galvanized steel, they are available in single or double (saddle) types for standard surfaced lumber (s4s) in sizes to fit 2×4-inch to 2×14-inch joists.

For further information write to the Simpson Co., Dept. C&E, 1060 E. 11th St., Oakland 6, Calif., or use the Request Card at page 18. Circle No. 109.

With safety flag flying, 3-wheel A-W roller "takes-off" as it resurfaces new jet runway at Philadelphia International Airport.

Austin-Western 3-wheel roller speeds resurfacing at Philadelphia Airport

The contract called for resurfacing 5800 ft. of runway, 150 ft. wide, at the Philadelphia International Airport. Contractor James J. Skelly, Media, Pa., chose an Austin-Western 3-wheel 10-14 ton roller to lay the required 1-in. wearing surface over a 2-in. base of bituminous concrete.

Well pleased with A-W

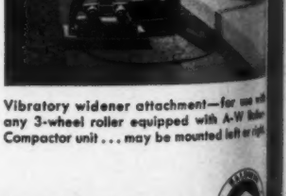
Mr. Skelly says, "I'm well pleased with the Austin-Western roller. It's more compact than most competitive rollers—easier to handle and gives the operator better visibility. Its V-8 engine delivers plenty of power, permitting the A-W roller to keep pace with the average daily output of 1600 tons of asphalt paving from two machines. There have been no maintenance problems. The A-W is an excellent roller—ideal for a progressive paving organization!"

Exclusive A-W features include hydraulic steering, full-width seats that let operators sit to right or left for better visibility; long-life oversize axles and antifriction bearings; many interchangeable parts; beveled outside roller edges that won't mark hot materials.

A-W 3-wheel rollers available in 8 to 11, 10 to 12, 12 to 14-ton models; tandems in 5 to 8, 8 to 12, 10 to 14-ton models. Portable tandem variable between 3½ to 6 tons. A-W vibratory Roller-Compactor unit fits any make 3-wheel roller; vibratory widener attachment also available.

A-W for profit

No matter what your compaction requirements, there's an Austin-Western roller to profitably meet your needs. Investigate! Consult your nearby Austin-Western distributor or write direct.



Vibratory widener attachment—for use with any 3-wheel roller equipped with A-W Roller-Compactor unit . . . may be mounted left or right.

Austin Western

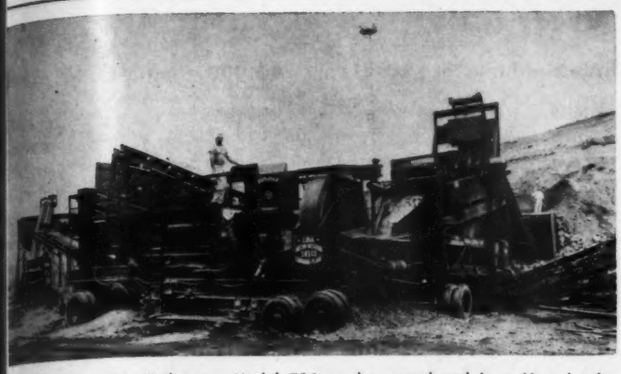
100th YEAR

CONSTRUCTION EQUIPMENT DIVISION, AURORA, ILL.

BALDWIN · LIMA · HAMILTON

Power graders • Motor sweepers • Road rollers • Hydraulic cranes

For more facts, use Request Card at page 18 and circle No. 357



This Hydrocone Model 736 crusher, employed in a Lima-Austin-Western Model 101-CE portable aggregate plant, allows for a simplification in plant flow, as well as providing more accurate and instantaneous control of product size.

New 36-inch crusher gives greater capacity

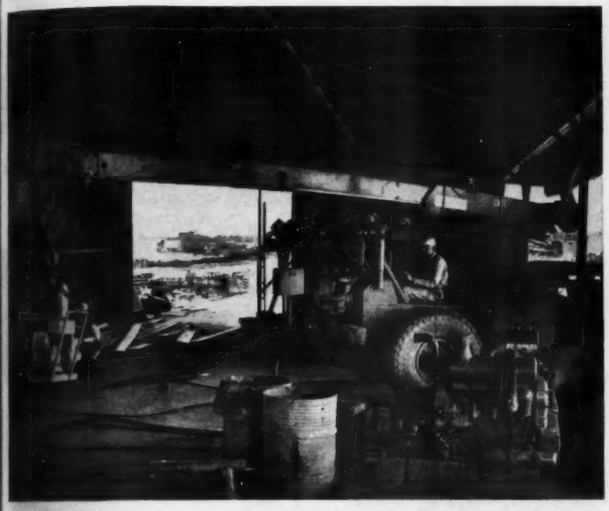
A 36-inch Hydrocone crusher said to produce a greater output with reduced fines, wear, maintenance, and space requirements has been introduced by Allis-Chalmers.

The new crusher, which includes Hydroset control (hydraulic adjustment of the crushing head), is available with feed openings of 7, 4, and 2 inches. Increased range of the machine's eccentric throws is said to give a tailor-made throw for each specific application.

The unit's bottom shell is flared outward to clear crushed product from the chamber faster with less wear. The 736 size has a two-arm spider designed to eliminate bridging of coarse feed.

Contributing to over-all operating advantages of this 36-inch Hydrocone are redesigned bearing and journal for longer life and reduced maintenance; 2½-foot saving in head room; and a crushing head that is quickly and safely lowered to free tramp iron.

For further information write to the Allis-Chalmers Mfg. Co., Dept. C&E, P. O. Box 512, Milwaukee, Wis., or use the Request Card at page 18. Circle No. 27.



5 ton range A-W 210 hydraulic crane works easily in tight quarters with low overhead clearance.

T. L. James & Co. says:

Austin-Western hydraulic cranes . . . most useful multi-purpose equipment

"Our three Austin-Western hydraulic cranes are the most useful multi-purpose equipment we know of. We'd hate to have to try to do without them . . . they are the tops in materials handling units. We often wonder how we got along before we had them," says T. L. James & Co., Ruston, La., construction firm.

Reduces equipment downtime

They continue, "Reducing downtime, by speeding maintenance in the field on our $5-million equipment fleet, is an important dollar-saving duty of the cranes. They are used to remove and replace engines, transmissions, crawler assemblies, wheels, etc.

"All-wheel steering and low boom clearance are extremely important. These features permit the cranes to work in spots where no other lifting equipment can operate. All-wheel drive means plenty of traction. Hydraulic controls make it simple and easy to operate with precision. And it has lots of mobility for highway travel, too.

"We've had the A-W cranes for 3 years. They often work 9½-hr. shifts 6½ days a week. But maintenance has been no problem because of the quality and rugged construction of the units and our preventive maintenance program."

5 models available

Austin-Western hydraulic cranes are available in five models: The 110, 3-wheel design, 3-5 ton capacity; the 210, self-propelled, 5 ton capacity; the 210-P for truck or stationary mounting, 5 ton capacity; the 220, self-propelled, 6 ton capacity; and the 410, self-propelled, 10 ton capacity. Choice of power . . . wide selection of optional equipment for added versatility.

Investigate ways in which Austin-Western hydraulic cranes can make profits for you. See your nearby Austin-Western distributor now or write us.

Austin Western 100th YEAR — CONSTRUCTION EQUIPMENT DIVISION, AURORA, ILL.

BALDWIN · LIMA · HAMILTON

Power graders • Motor sweepers • Road rollers • Hydraulic cranes

For more facts, use Request Card at page 18 and circle No. 358

Hydraulic pipe bender is multipurpose unit

A multipurpose hydraulic pipe and conduit bender of completely new design is offered by the Greenlee Tool Co. It is designed to make accurate offsets and full 90-degree bends close to the end of ½ to 2-inch pipe or conduit with but one setting and one ram stroke. In addition, 180-degree bends, or bends of any degree between 90 and 180 degrees, are easily made.

According to the manufacturer, the bender is easily and quickly set up and is operated by one man.

The unit develops 15 tons of ram pressure and can be hand or power-pump operated. It is easily wheeled from job to job.

With heavy-duty casters mounted on the base, this bender can be operated at floor level; or it may be set up as a table of any height simply by inserting lengths of standard pipe in the base as legs and screwing the casters on the legs.

For further information write to the Greenlee Tool Co., Dept. C&E, 2136 12th St., Rockford, Ill., or use the Request Card at page 18. Circle No. 76.

Lightweight chain saw takes bars to 30 inches

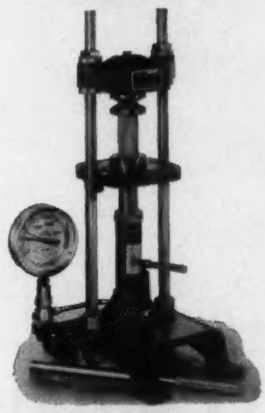
Heavy-duty power combined with high direct-drive chain speed are said to make the McCulloch Model One/70 saw a handy tool for contractors.

The unit weighs only 21 pounds, and it takes guide bars from 12 to 30 inches.

Standard equipment includes a new high-voltage ignition system for maximum starting ease.

For further information write to the McCulloch Corp., Dept. C&E, 6101 W. Century Blvd., Los Angeles 45, Calif., or use the Request Card at page 18. Circle No. 97.

CUT ROAD BUILDING COSTS with the **CARVER LABORATORY PRESS**



This versatile, hydraulic Press quickly repays its cost in all kinds of pressing tests. The testing of native materials for more economical Road-base construction is only one example of the possible savings through laboratory research with the Carver Laboratory Press.

Compact, self-contained, this press provides controlled pressures to 20,000 lbs. Interchangeable accessories are available for

• CRUSHING TESTS • BRIQUETTING
• BREAKING TESTS • SHEAR TESTS
• BENDING TESTS

FRED S. CARVER INC.
HYDRAULIC EQUIPMENT
7 CHATHAM ROAD, SUMMIT, N. J.

Send catalog, describing Carver Laboratory Press and Standard Accessories.

NAME .....
FIRM .....
ADDRESS 69

For more facts, use coupon or circle No. 359

Hough's new H-50 Payloader replaces the Model HU; features 5,000-pound carry capacity. The torque converter is closely matched to engine and transmission characteristics.

Improved tractor shovel carries 5,000 pounds

The Frank G. Hough Co. has announced a new 4-wheel-drive, rubber-tire tractor shovel with 5,000-pound carry capacity — the Model H-50. This loader, already in production, replaces the Model HU Payloader.

Features of the new H-50, according to the manufacturer, include more power available for both hydraulics and traction, more efficient torque converter, complete power-shift transmission, power-transfer differentials, power steering, pry-out bucket action, safety boom arms, power-boosted brakes, and numerous refinements. The new and more powerful gasoline or diesel engines provide from 90 to 92 horsepower.

The Paylomatic power-shift transmission provides three speeds in each direction. Fingertip shifting up or down in either direction, without foot clutching or stopping for a range shift, gives fast operating cycles, the company reports.

For further information write to The Frank G. Hough Co., Dept. C&E, 710 Seventh Ave., Libertyville, Ill., or use the Request Card at page 18. Circle No. 45.

small components do a
BIG JOB!

PUNCH-LOK HOSE CLAMPS LAST THE LIFE OF THE HOSE
DOC PUNCH
PUNCH-LOK CHICAGO
Mr. LOK
PUNCH-LOK HOSE CLAMPS WON'T SNAG, WON'T LEAK

PUNCH-LOK
HOSE CLAMPS

. . . are very small in comparison to many of the machines on which they're installed, but PUNCH-LOK Hose Clamps do a BIG, BIG job. Their absolute dependability in clamping vital hose connections makes high production schedules possible. They are on the job day after day . . . never require maintenance or repairs. Easy and quick to apply, once clamped they stay clamped for the life of the hose.

See your nearby Punch-Lok distributor or write for free descriptive catalog.

"The sign of a GOOD Hose Clamp"

PUNCH-LOK Company

0817

Dept. J, 321 N. Justine Street, Chicago 7, Illinois

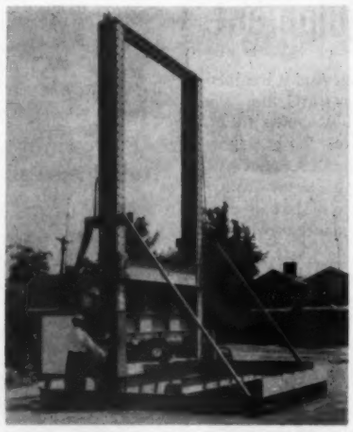
For more facts, circle No. 360

For more data on any item, circle indicated number on card at page 18.

Pipe-testing machine handles large sections

The Forney's Inc. Tester Division announces the new Model PT-250 pipe-testing machine with a loading capacity of 500,000 pounds. Designed to accommodate pipe in 8-foot lengths, up to 144 inches in diameter, the frame can be extended in width to accommodate pipe in 16-foot lengths.

The machine is equipped with two 8-inch-diameter hydraulic rams with a working stroke of 10 inches. The load indicator is 16 inches in diameter and shockproof-mounted in a steel lock box along with the pump assembly, which consists of a 2-stage manual pump and a constant-flow electric pump with a widely variable rate of loading. The pumps can be operated separately or simultaneously.



The new Forney pipe-testing machine can accommodate 16-foot lengths of pipe and has a loading capacity of 500,000 pounds.

Pressure beams are spring-counterbalanced so that their weight will not affect the gage reading, and they are movable vertically by means of a heavy worm-gear winch and an arrangement of pulleys.

For further information write to Forney's Inc., Tester Division, Dept. C&E, P. O. Box 310, New Castle, Pa., or use the Request Card at page 18. Circle No. 50.

MOBILE OFFICE Units are low in cost . . . Built to your specifications . . . There's a unit to fill your every need.

Because MOBILE OFFICE Units are easy to move from job to job, they enable you to have office, engineering, paymaster and other facilities at every point of your operation.

These units are economical, time saving, rugged and durable. They are self-containing, and are available with air-conditioning, and can be fitted to your specifications.

MOBILE OFFICES are being used by major contractors and other major businesses throughout the United States. In every case they have proven their worth.

Remember, whatever your needs may be, a MOBILE OFFICE unit can be built to fill your requirements.

If It's Mobile . . . We Build It!

MOBILE OFFICE, INC.
Phones; DOrchester 3-1048

7314 Stony Island Avenue, Chicago 49, Illinois

For more facts, circle No. 361

ROCKLAND— THE MOST VERSATILE LAND-CLEARING ATTACHMENTS IN THE WORLD.

REVERSIBLE TEETH:
BOTH ENDS MAY BE USED FOR CLEARING

- ROCK RAKES
- GENERAL PURPOSE RAKES
- BRUSH RAKES
- TREE KNOCK-DOWN BOOMS
- TREE SAWS
- BACK-RIPPER TEETH
- STUMPMASTER BLOCK
- STUMP PULLERS
- TOOL BARS
- UNDERCUTTERS
- ROOT CUTTER TEETH
- HI-BALLS AND CHAI

Rockland Products may be purchased from Allis-Chalmers, Eimco, International Harvester and Oliver Crawler Tractor dealers. For additional information, contact

ROCKLAND ALLIED EQUIPMENT CO.
3778 West Colonial Drive • Orlando, Florida

For more facts, circle No. 362

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We Build It!

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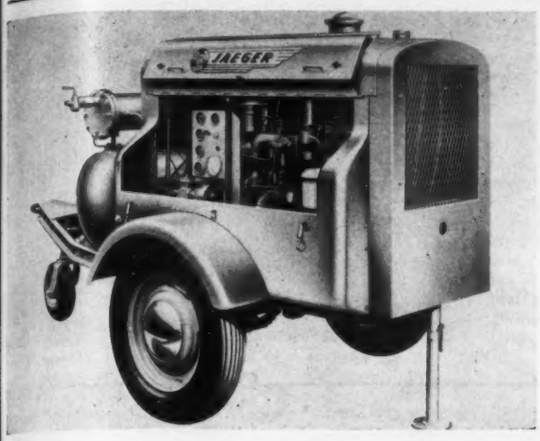
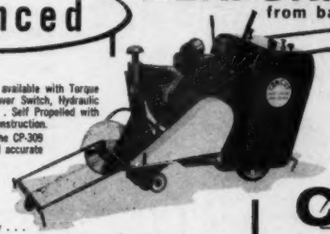


For further information on any product described in this section, circle the indicated number on the Request Card at page 18.

balanced PERFORMANCE from balanced design...



The New Concut CP-309 . . . available with Torque Control Blade Drive, Blade Saver Switch, Hydraulic Controls, Power Raise Out . . . Self Propelled with Balanced, One Piece Frame Construction.
These Concut features make the CP-309 the most dependable, fast and accurate Concrete Saw in its class.
Write or contact your Concut representative for details.

Model CP-309
Available with "Up-Cut" or "Down-Cut" Blade Action

CONCUT

distributed in the Mid-west by . . .
CONCUT MID-AMERICA Inc., 5783 N. Lincoln Ave., Chicago 45, Ill.
1845 Belcroft Ave., El Monte, Calif.

For more facts, use Request Card at page 18 and circle No. 363

Air compressor develops 85 cfm at 100 psi

The Jaeger Machine Co. has available the Model 85 rotary air compressor.

The unit is powered with a Continental Model F-162 engine developing 45 horsepower at sea level and equipped with a 12-volt electric starter. Standard equipment includes hour meter, automatic blow-down valve, thermostatically actuated oil bypass valve, retractable pneumatic-tire dolly wheel, and fenders. The compressor unit is a single-stage oil-cooled rotary developing 85 cfm at normal 100 psi.

According to the manufacturer, controls are extremely simple yet provide instant response to air demands.

For further information write to The Jaeger Machine Co., Dept. C&E, 550 W. Spring St., Columbus 16, Ohio, or use the Request Card at page 18. Circle No. 112.

New soil scrapers for I-H tractors

The Servis Equipment Co. announces 66 and 72-inch soil scrapers, available with a 2-point fast-hitch feature to fit International Harvester tractors.

They come equipped, as standard, with 3-point hitch, the 66-inch size having 6 scarifier teeth and the 72-inch size having 9 scarifier teeth. Other features include a different curve in the moldboard section to insure a full load of dirt, and a full-length bumper bar on the rear blade to prevent bending under rough service.

For further information write to the Servis Equipment Co., Dept. C&E, 1000 Singleton Blvd., Dallas, Texas, or use the Request Card at page 18. Circle No. 11.

mix for profit day after day

—with the low-cost Barber-Greene 840 Series

Barber-Greene's 840 Series continuous asphalt plant has proved a profit-maker for more than 1,000 owners. It offers unequaled versatility . . . unmatched portability . . . more mix for the money than any plant in its range. Here's why:

For Cold Mixes—all you need are mixer and calibrated feeder to produce capacities to 55 tons per hour.

For Intermediate-Hot Mixes—add a dryer to your mixer-feeder combination and produce any intermediate-hot mix at capacities to 55 tons per hour.

For High-Type Hot Mixes—simply add a gradation unit and you're set to meet even the toughest specs of highest-type mixes.

For Flexibility—you can't beat the 840 Series. All units are mounted on pneumatic tires for fast truck towing. Jacklegs speed plant setup, eliminate need for cribbing. You move only the components required to meet mixing needs . . . cover the entire range from cold mix to high-type multiple-aggregate mixes. Write for bulletin.

59-14-A

Representatives in Principal Cities of the World

Barber-Greene BG

Main Office and Plant AURORA, ILLINOIS, U. S. A.
Plants in DeKalb, Illinois..Detroit..Canada..England..Brazil..Australia

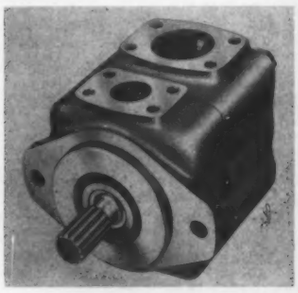
CONVEYORS . . . LOADERS . . . DITCHERS . . . ASPHALT PAVING EQUIPMENT

For more facts, use Request Card at page 18 and circle No. 364

Boasting a giant 235-foot tubular boom, this Manitowoc mobile crane highlighted the recent World Trade Week in Philadelphia by lifting a 46,800-pound box car 130 feet in the air. The crane features a rubber-tire crane mount manufactured by Talbert Trailers, Inc. With all supporting axles powered, the crane travels the highway meeting axle load weight restrictions in many states. For further information write to **Talbert Trailers, Inc.**, Dept. C&E, 7950 W. 47th St., Lyons, Ill., or use the Request Card at page 18. Circle No. 90.

Hydraulic pump offered for earthmoving units

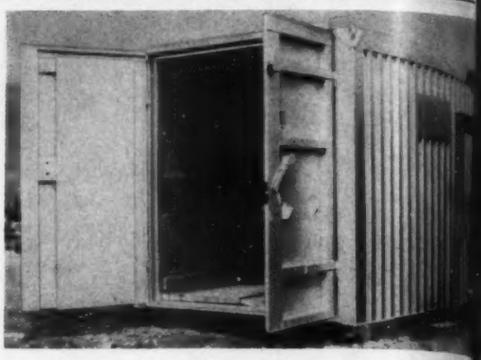
To provide more hydraulic horsepower in less space, Vickers, Inc., a division of the Sperry Rand Corp., announces the Series 45 vane pump for a wide variety of earthmoving equipment.



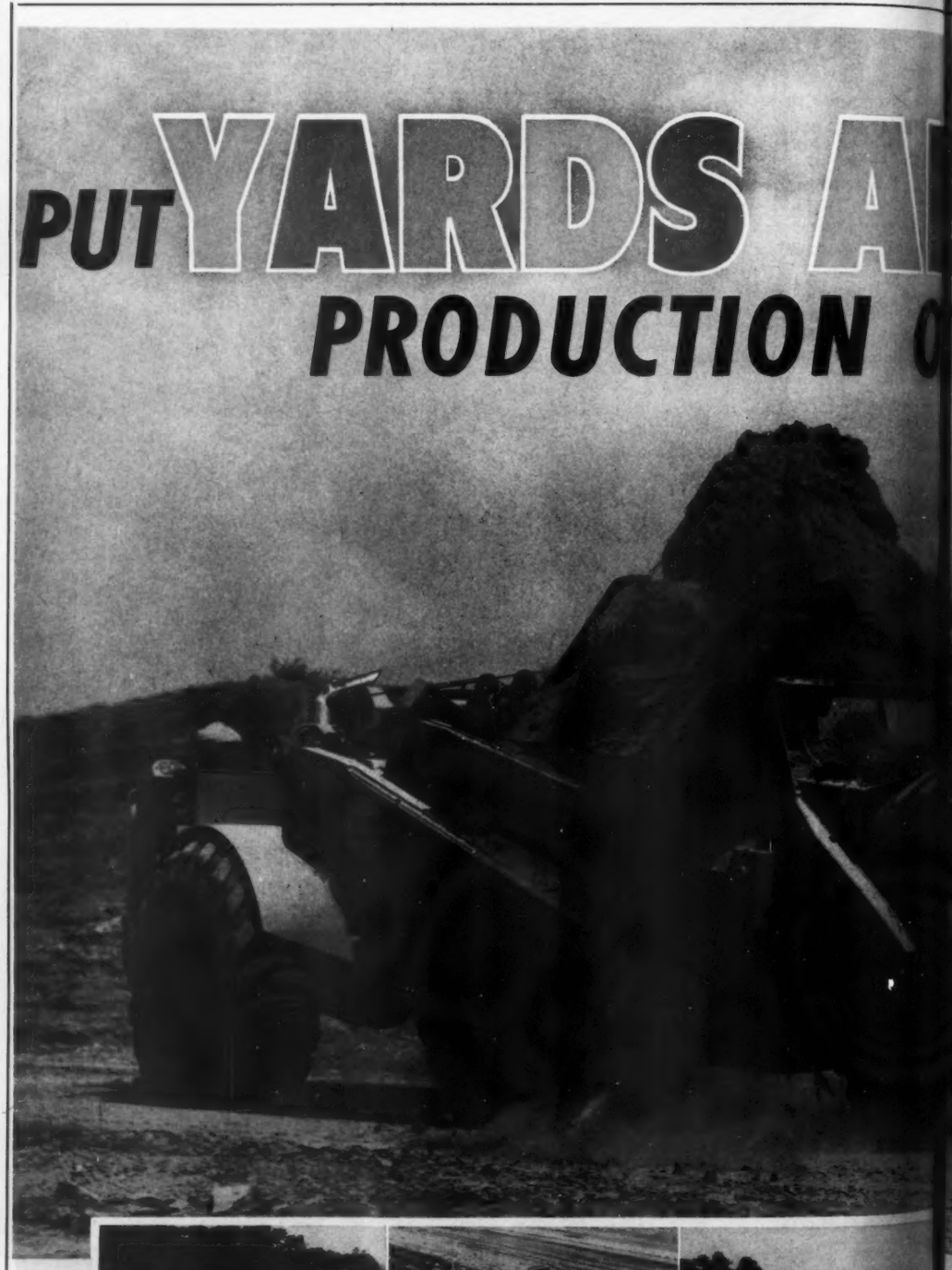
Many new design features of the pump are said to insure positive vane tracking and provide efficient operation at speeds up to 2,000 rpm and pressures up to 2,000 psi.

Deliveries of the three models of the new pump are 52, 63, and 75 gpm at 2,000 rpm, 2,000 psi. At 1,200 rpm, 100 psi (SAE rating), deliveries are 34, 41, and 48 gpm, respectively. One pump housing accommodates any of three pumping cartridges.

For further information write to Vickers, Inc., Dept. C&E, P. O. Box 302, Detroit 32, Mich., or use the Request Card at page 18. Circle No. 143.



As storage place for explosives, the Berlanti Construction Co., Inc., of Harrison, N. Y., is using Jetapak metal shipping containers in the building of the Charlottesburg Dam for the city of Newark, N. J. According to the manufacturer, the container meets legal requirements concerning storage of explosives by a simple modification: it is lined on the inside with 2-inch planking. Also added is lock and baffle protection for the padlocks. Berlanti also uses Jetapak containers for field storage of instruments and equipment. For further information write to **Jeta, Inc.**, Dept. C&E, 957 Saw Mill River Road, Yonkers, N. Y., or use the card at page 18. Circle No. 28.



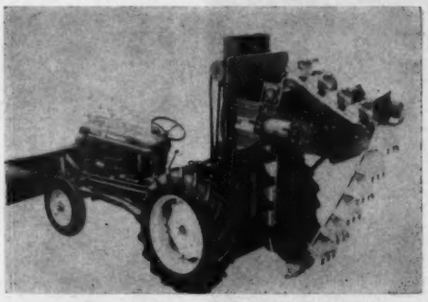
Soils-survey instrument speeds site explorations

A portable soils-survey instrument, the Vibroground Model 274-M manufactured by Associated Research, Inc., is said to give data quickly for various soil studies.

The instrument utilizes the Barnes layer method to derive through earth conductance subsoil contour profiles that clearly indicate the locations, depth, and type of soil layers.

The Model 274-M is portable, weighing only 20 pounds.

For further information write to Associated Research, Inc., Dept. C&E, 3777 W. Belmont Ave., Chicago, Ill., or use the Request Card at page 18. Circle No. 57.



The initial unit in the Everett 2000 Series trencher line.

Announce trencher line with many new features

A new line of Everett trenchers said to incorporate many features previously unavailable in this type of equipment is announced by the manufacturing division of Earth Equipment Corp. The 2000 Series trencher is designed for easy attachment to many models and makes of tractors.

Trenching up to 24 inches in width is possible with the new machines, with optional bucket lines available. Digging depth to 60 inches is available with the Model 2060; to 42 inches with the Model 2042.

Among the features are flame-hardened sprockets; heavier chains; a new type of mast and headboard construction that keeps bucket line in correct alignment; a new subframe that relieves the tractor of considerable strain and makes dozer installation easier; and simplified rigid member construction adding to over-all strength.

For further information write to the Earth Equipment Corp., Dept. C&E, 1409 Santa Fe Ave., Los Angeles 21, Calif., or use the Request Card at page 18. Circle No. 144.

Hydraulic-system tester for shop, field use

A new hydraulic-system test bench that can be used to check repaired parts in the shop or for trouble-shooting in the field is said to slash costly downtime of equipment. Manufactured by Schroeder Bros., the double-duty Barrel Bench is available either as a built-up unit or in component parts for contractor assembly.

The bench consists of a work table equipped with strainers, suction filter, micronic filters, and drains. A standard 55-gallon drum can be used as a reservoir. Instrumentation is provided by a portable circuit tester measuring flow, pressure, and temperature. Equipped with quick disconnects, the tester may be removed from the bench and connected into the hydraulic system of the faulty equipment to pinpoint defective pumps, valves, or cylinders before any parts are removed.

A pump drive unit, driven by either electric motor or internal-combustion engine, completes the assembly.

For further information write to the Schroeder Bros. Corp., Dept. C&E, Nichol Ave., Box 72, McKees Rocks, Pa., or use the Request Card at page 18. Circle No. 56.

←For more facts, circle No. 365

See for yourself what we mean by the "Yards Ahead" performance of the Curtiss-Wright scraper line. Make your own guess of how many yards of tough clay, shale and rock are packed in the heaping bowl of this Curtiss-Wright model CW-226! Even at the most conservative estimate, you'll agree that this is the high production you want on your job. Remember, this is no ordinary machine . . . It is the CW-226—largest two-axle scraper on the market . . . one of the five that are working on Talbott Construction Corporation's Erlanger, Kentucky road construction contract . . . another job being completed faster and more profitably by the "Yards Ahead" performance of Curtiss-Wright scrapers.

CURTISS-WRIGHT CORPORATION
SOUTH BEND DIVISION, SOUTH BEND, IND.
AD-NO. 52-44

SOUTH BEND DIVISION
CURTISS-WRIGHT
CORPORATION
SOUTH BEND, INDIANA

Special wide axles on the Model 1295 provide a crawler width of 13 feet 4 inches, center to center of the crawler girders.

Crawler-mounted crane lifts 190,000 pounds

Heavy lifts, up to 190,000 pounds when working at a 12-foot radius with a 60-foot boom, are one of the important features of the new Koehring Model 1295 lift crane.

The machine is equipped with special wide axles providing a crawler width of 13 feet 4 inches, center to center of the crawler girders. With 42-inch shoes, the outside-to-outside crawler width is 16 feet 10 inches. The length of the crawlers is 19 feet 3 inches.

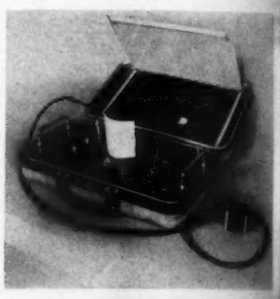
The Model 1295 can be equipped with a third drum, automatic power boom lowering, power load lowering, and independent traction, as optional equipment. The machine is so designed that any one or all of these items can easily be added to the machine, either at the plant or in the field. Maximum boom lengths for the machine are 170 feet of main boom or 160 feet of main boom with an added 30 feet of jib.

Power-actuated clutches on the main drums are applied by hand lever control. Traction brakes are spring-loaded and released by air to help reduce operator fatigue.

Other features built into the Koehring 1295 lift crane include: anti-friction bearings on swing and traction clutches and on all constantly rotating shafts; involute splines on all shafts; and a self-cleaning crawler system.

For further information write to the Koehring Co., Dept. C&E, 3026 W. Concordia Ave., Milwaukee 16, Wis., or use the Request Card at page 18. Circle No. 104.

Portable device records blast vibration intensity



Immediate vibration-intensity records and a meter indication are provided by the new portable Blastcorder. According to the manufacturer, blasters themselves can operate this field instrument to help control blasting within safe limits.

Easily demonstrated to home owners to maintain good community relations, the Blastcorder is said to help avoid costly delays and law suits. The routine maintenance of Blastcorder records can provide an expert with valuable evidence for defense if litigation develops.

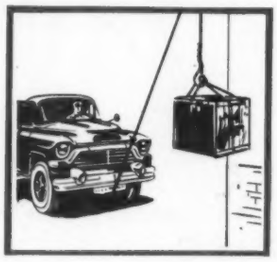
The instrument indicates or records the peak acceleration of ground or structural vibrations. Knowing acceleration, blasters may either refer to the Bureau of Mines damage-safety index, or derive an index based upon local practice.

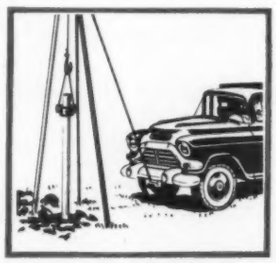
The Blastcorder is self-contained and battery-powered. It weighs about 20 pounds, and measures 6×12×18 inches. One, two, or three pickups may be used.

For further information write to The Geotechnical Corp., Dept. C&E, P. O. Box 28277, Dallas 28, Texas, or use the Request Card at page 18. Circle No. 34.

a NEW BRADEN winch for the NEW FORD

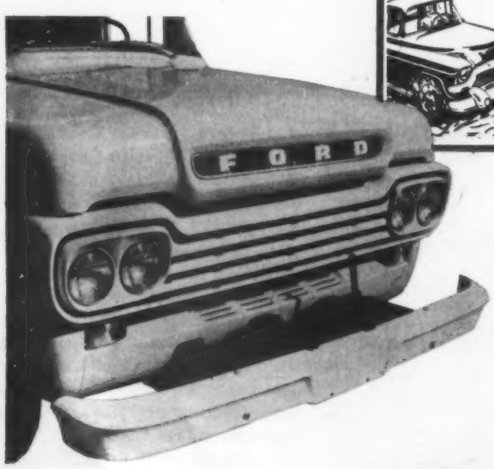
4 wheel drive truck





BRADEN MODEL LU2-15 — a front end winch kit for the FORD F100 and F250 (4x4). Completely equipped with base angles and cable roller assembly to adapt to frame extensions for the truck, and all driving parts. This compact, lightweight winch has a safe working load of 8,000 lbs., and greatly adds to the usefulness of this new, versatile FORD truck.

The BRADEN LU2 model is also available in kits for ½ and ¾ ton (4x4) Chevrolet, Dodge, International and GMC trucks. The same type quality materials and workmanship, found in heavier winches, have gone into making this compact, easy to-operate winch. Write for information on the models you are interested in.



Replacement parts are available through BRADEN distributors or from factory

BRADEN WINCH COMPANY
P. O. Box 547, Broken Arrow, Oklahoma

BRADEN Winches

In service around the world

For more facts, use Request Card at page 18 and circle No. 366

New Modern Design —Sound Engineering
produced this outstanding
WARRINGTON—VULCAN
Single-Acting
STEAM PILE HAMMER

- Heavy ribs give more support to cylinder head . . .
- Shorter channels permit easier insertion of hammer into leaders . . .

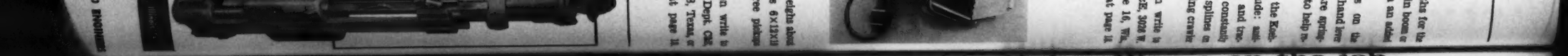
Operating at a medium steam pressure this versatile hammer delivers a moderate frequency of low velocity blows from a relatively heavy ram. A favorite for driving piles of all descriptions. Made in 6 sizes with Rated Striking Energy from 825 ft. lbs. to 30,225 ft. lbs.

Ask for full information

VULCAN IRON WORKS INC. 327 North Bell Avenue, Chicago 12, Illinois

Manufacturers of Pile Driving Hammers Since 1852

For more facts, use Request Card at page 18 and circle No. 367



Huber-Warco on the job

Put a Huber-Warco to the test.
Get more economy and efficiency
in grading operations.

WISCONSIN . . . The 5D-190 makes a final cut on a county road project for Gottschalk Bros. Construction Company of Edgar, Wisconsin.

OHIO . . . Harry Miller Excavating Company of Suffield, Ohio puts the 5D-190 to work on a highway relocation project.

KANSAS . . . On the Kansas Turnpike the 5D-190 handles a grading assignment for List & Clark Construction Company of Kansas City, Missouri.

H-W Graders Work Hard . . . And Fast

Huber-Warco motor graders . . . ranging from 102 to 195 horsepower . . . have proven themselves on contractor jobs throughout the world.

Powerful diesel engines, working in combination with a torque converter, power shift transmission and tail-shaft governor permit these units to move more dirt with fewer passes. This ability to handle increased volume means more profit on the job.

The torque converter makes more usable power available. The tail-shaft governor automatically adjusts engine RPM to meet any load condition, maintaining any working speed set by the operator.

With the power shift transmission the operator is able to make quick shifts under full load, with no interruption in power flow from the engine to the load. This transmission COMPLETELY ELIMINATES THE NEED FOR A MASTER CLUTCH.

Another important feature of the Huber-Warco motor graders is the completely cab-controlled hydraulic blade movement for bank sloping operations. Without ever leaving the cab, and without manual adjustments, the operator can move the blade to a 90-degree bank sloping angle on either side. The grading operation is never halted to manually move the blade.

A power-sliding moldboard, operated from the cab, is standard. There's no deviation from the line of travel. This enables the operator to keep his wheels on good footing.

Operators like the new ease in operation with Huber-Warco motor graders. They like the high axle clearance; the easy to reach controls and the 360-degree blade rotation.

You'll like Huber-Warco graders, too, when you find out just how they can add to your job efficiency, and profit. Your Huber-Warco distributor is the man to see for complete specifications, and a demonstration. Why not see him soon. In addition, he can arrange terms up to 36 months, and rentals.

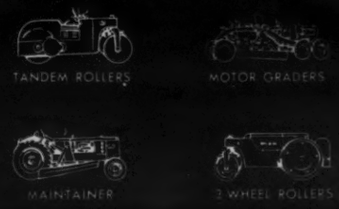
Terms up to 36 months and rentals available . . . contact your Huber-Warco distributor

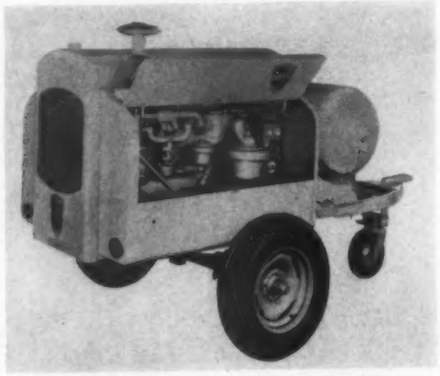
Huber-Warco Company

MARION, OHIO

For more facts, use Request Card at page 18 and circle No. 368

HUBER
W
WARCO





Portable air compressor has 125-cfm capacity

The Model 125G1 single-stage, piston-type portable air compressor powered by a gasoline engine is offered by the Le Roi Division of the Westinghouse Air Brake Co. With a 125-cfm capacity, the unit provides enough 100-psi air to power two heavy or three medium breakers, one medium or two light sinkers, or one light wagon drill. Rated compressor speed is 1,300 rpm. Operation of the unit is simple, according to the manufacturer.

Both the overhead-valve 4-cylinder engine and the 2-cylinder compressor have replaceable wet-type cylinder sleeves for longer wear. Because the Model 125 engine-compressor unit has only one crankcase and one crankshaft, need for a clutch or coupling is eliminated. There is also only one pressure-type lubrication system.

For further information write to the Le Roi Division, Westinghouse Air Brake Co., Dept. C&E, 1706 S. 60th St., Milwaukee 1, Wis., or use the Request Card that is bound in at page 18. Circle No. 146.

Lightweight bench shear cuts with one stroke

A new bench shear is offered by the Edwards Mfg. Co.

Weighing only 8 pounds, the Edwards Handy No. 1 will cut sheet steel up to 3/32 inch thick in any length or width, and will cut nonferrous metals, rods up to 5/16 inch thick, and wire. According to the manufacturer, cutting blades are easily removed and resharpened, and the tool cuts easily with one stroke, leaving no burrs.

For further information write to the Edwards Mfg. Co., Dept. C&E, Albert Lea, Minn., or use the Request Card at page 18. Circle No. 15.

V-belt drives simplify maintenance problems

A new line of standard V-belt drives incorporating interchangeable, quick-detachable bushings is announced by The American Pulley Co. The new fixed-pitch, standard sheave drives, called American Q-D-V, can be easily

Two-mile-long airport runway in the Susquehanna River rests on a foundation of Bethlehem blast-furnace slag. *Contractor:* C. J. Langenfelder

Air Force Runway Built on Slag in Susquehanna River

Olmsted Air Force Base, Middletown, Pa., was unable to accommodate jet aircraft on its existing runways. Nor was there room for expansion—except in the Susquehanna River. The river proved to be the best location for a two-mile-long runway.

The twin problems of constructing a solid runway foundation, and a levee to protect the runway from high river water, were solved by using blast-furnace slag from an adjoining Bethlehem steel plant. The levee and runway foundation took 4 million cu yds of slag—one of the largest single uses of blast-furnace slag on record.

Construction of the runway base required an additional 1½ million cu yd. The amount of slag used for both jobs would fill a train of hopper cars 467 miles long.

Blast-furnace slag had two distinct advantages: when only six inches above water level, it consolidated to such a degree that 60-ton hauling units could operate over it. Secondly, because compaction of slag is little influenced by moisture, work could continue even after heavy rains.

In addition to the slag, Bethlehem supplied all the steel reinforcement used in the concrete pavement.

BETHLEHEM STEEL COMPANY
BETHLEHEM, PA.
Export Distributor: Bethlehem Steel Export Corporation

BETHLEHEM STEEL

DUDGEON HYDRAULIC JACKS
SALES RENTALS
CAPACITY TO 600 TONS
FOR:
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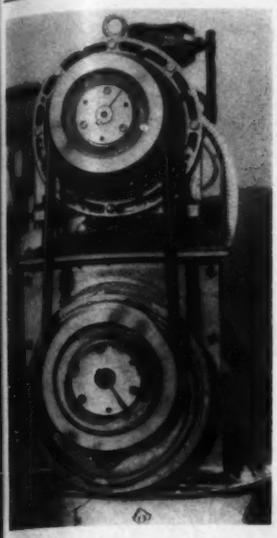
UNDERPINNING
BRIDGES
PIPE PUSHING
Write to Dept. M
DESIGNERS and MANUFACTURERS OF
Hydraulic Units For Special Applications
RICHARD DUDGEON INC.
789 BERGEN STREET BROOKLYN, N. Y.
• ST 8-4040 •
For more facts, circle No. 370

For more facts, use Request Card at page 18 and circle No. 369



mounted on and removed from the shaft for easy maintenance.

The Q-D bushed sheaves are interchangeable with a wide range of equipment drives such as conveyor pulleys, fan drives, sprocket drives, couplings, and timing belts. The units are designed to handle any power requirements from 1 to 1,500 horsepower, with speed ratios up to 1.55:1.00.

The American Q-D bushings for standard—A, B, C, and D—cross-section belts are interchangeable with the Q-D bushings used on the larger sizes of the newly developed, compact 3-5-8 V-belt drives.

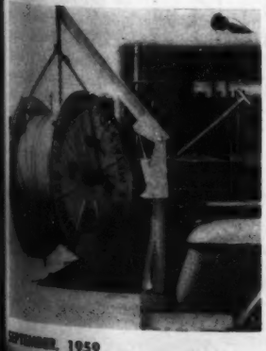
For further information write to The American Pulley Co., Dept. C&E, 4200 Wissahickon Ave., Philadelphia, Pa., or use the Request Card at page 18. Circle No. 85.

Hand hydraulic crane lifts up to 2,500 pounds

For safe one-man lifts on any construction job from trucks or pickups, the Ideal Crane Co., Inc., offers a hand hydraulic unit that lifts up to 2,500 pounds. It is interchangeable with dolly or truck mountings. One crane can be used with any number of trucks.

The unit is available in 1,500 and 2,500-pound-capacity models with extension arms, barrel chains, appliance straps, inside or outside truck mounts, and dolly mount as required.

For further information write to the Ideal Crane Co., Inc., Dept. C&E, Box 518, Suite 51, Wichita Falls, Texas, or use the Request Card at page 18. Circle No. 91.



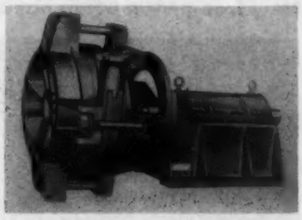
Offer new slurry pump with wide application

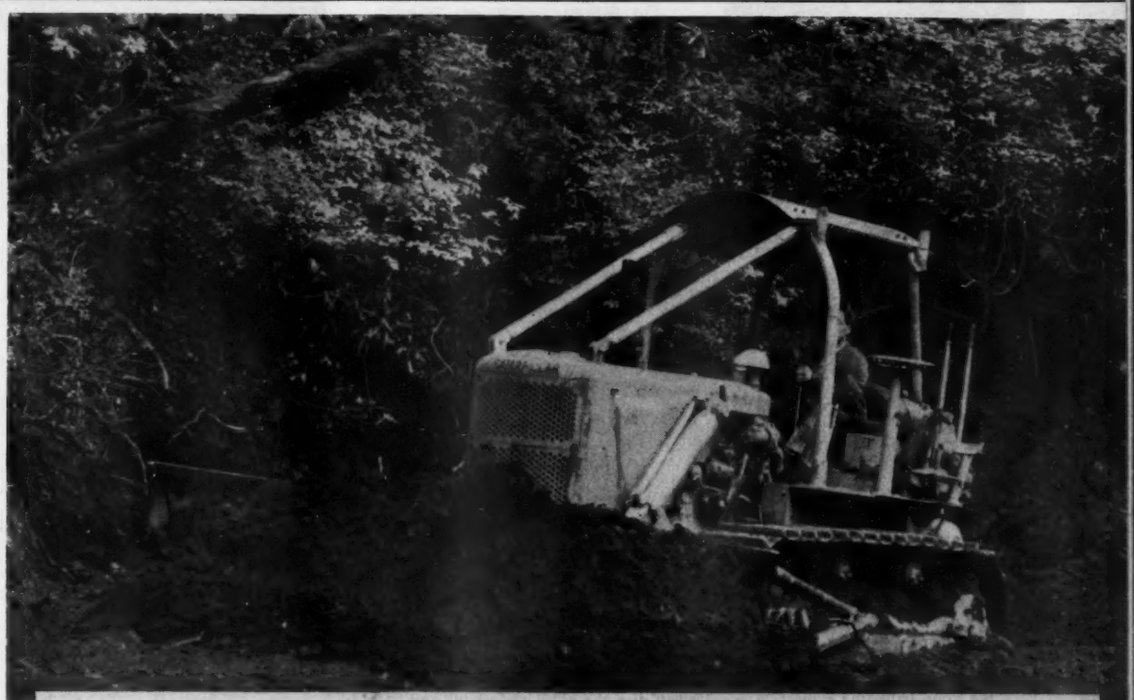
The Morris Machine Works offers the Model 6 RXW centrifugal pump designed to handle abrasive slurries of cement, sand, and other materials. Wider internal pump areas permit unusually great ranges in certain cement applications, according to the manufacturer.

Ranging in 2 to 6-inch sizes, the type RX pump features a low-pressure stuffing box and 4-bolt accessibility for easy maintenance. Wearing parts are reached without disturbing piping; the rotating element is adjustable to compensate for wear.

A heavy outboard radial bearing provides extra capacity for high overhung loads; suction and discharge nozzles swivel to meet requirements of any installation.

For further information write to the Morris Machine Works, Dept. C&E, 20 E. Genesee St., Baldwinsville, N. Y., or use the Request Card at page 18. Circle No. 63.





D6 builds mountain road to Portland Reservoir

Portland, Oregon, gets its supply of pure, soft mountain water from the Bull Run River . . . 30 miles east of the city. The river has its source in Bull Run Lake near the summit of the Cascades . . . elevation 3,175 feet. The uninhabited, 218-square-mile area is heavily-timbered, rugged terrain. To repair a dam at Bull Run Lake required carving out 5 miles of new road.

A Caterpillar D6 Tractor with a No. 6A Bulldozer and a Hyster donkey did the job . . . rough grading, ditching, clearing boulders, skidding logs, spreading crushed rock. All this plus general maintenance jobs such as winching logs from the lake and river.

The versatile D6 outworks any tractor in its size range. It combines high production with low operating and maintenance costs.

The 93 horsepower Caterpillar Engine delivers the push and pull to make the hard work easy; the engine's foul-proof fuel system runs on economy-type diesel fuels.

The D6 is fast . . . speeds up to 6.6 MPH . . . and easy to operate. A hydraulic unit takes the effort out of steering, helps the operator work at top efficiency.

The exclusive Caterpillar oil clutch goes up to 2,000 hours—one whole season—without adjustment. When other type clutches need *replacing*, a Caterpillar oil clutch may need an *adjustment*.

All of these features on the D6 combine to give you a profitable return on every dollar invested. And for added versatility . . . there's a complete line of attachments for the D6.

You could be missing out on a machine valuable to your operation. A demonstration on your job will show you why the D6 is the work horse on so many earthmoving jobs. Call your Caterpillar Dealer soon. He'll give you the full story . . . top production facts and figures.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

CATERPILLAR

Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

HIGH-QUALITY MACHINES WITH A LOW FINAL COST

For more facts, use Request Card at page 18 and circle No. 371

New free-piston pump has only 9 moving parts

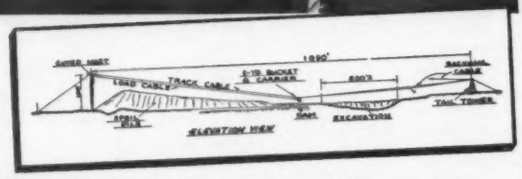
The Crossley Machine Co. announces a new free-piston pump with only 9 moving parts.

The unit impels a continuous air-free flow without pulsating or surging. It requires no safety or relief valves; when a stoppage occurs, the pump stops. It can be operated with safety and efficiency when submerged, or under any other condition. There are no motors or engines, drive shafts, packings, seals, oils, or greases.

For further information write to the Crossley Machine Co., Dept. C&E, 301 Mon St., Trenton, N. J., or use the Request Card at page 18. Circle No. 101.

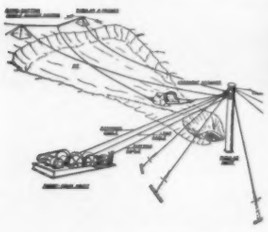
Three Sauerman Methods for Cutting Excavating and Reclamation Costs

DIGGING and CLEARING



Slackline Cableway—A 2-yd. bucket is used to maintain a clear channel to an irrigation project. The cableway digs the hard packed silt and conveys it to a spoil pile on the downstream side of the dam. Method permits removal of silt without wasting water.—*Sauerman News No. 146.*

RECLAMATION TO HOPPER



DragScraper—A 4-cu. yd. DragScraper digs sand and gravel from a wet pit and hauls it 400 ft. to grizzly hopper. This new machine handles increased plant demands in one shift. Two were required with the former installation.

—*Sauerman News No. 144.*

UNDERWATER TRENCHING

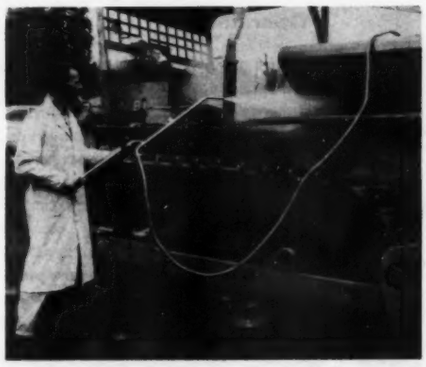
DragScraper and Crane—Here's how a DragScraper used with a carrier and track cable can extend the reach of any crane. This arrangement was highly successful in digging a trench for underwater pipe and backfilling after pipe was laid. —*Crane-DragScraper information is available in Field Report No. 228.*

Find out what the Sauerman Method can do for you

Give us details on your operation. Our engineers will give prompt recommendations and work with you to provide the best method for your requirements. Ask for Catalogs A (DragScrapers) and C (Slackline Cableways).

SAUERMAN BROS., INC. 624 SO. 28th AVE. BELLWOOD, ILL. Cable: CABEX—Bellwood, Ill

For more facts, use Request Card at page 18 and circle No. 372



The new X-O Kleen Gun operates off the engine exhaust as this tractor is cleaned by this man.

Rig-cleaning gun operates off engine

A new high-pressure equipment-cleaning gun that requires neither electricity nor piped water is announced by the national distributor, Seaboard Sales of Washington, Inc. The X-O Kleen Gun is operated by diesel or gas-engine exhaust.

Designed to provide operators of heavy equipment with a simple, effective means of keeping their tractors, graders, shovels, trucks etc., free of clogging mud, greases, and tar, the Kleen Gun is said to do everything a steam-cleaning plant will do but at a fraction of the cost and right where the equipment is working.

The X-O Kleen Gun consists of a 14-foot or more length of flexible stainless-steel tubing fitted with a specially designed cap that adapts to any size exhaust stack. A rubber suction hose is dropped in any 5-gallon water can to draw up the cleaning solution, which can be any steam-cleaning compound, diesel oil, or just plain water.

For further information write to Seaboard Sales of Washington, Inc., Dept. C&E, Bellingham, Wash. or use the Request Card at page 18. Circle No. 53.

New 2-way mobile radio is compact and powerful

Aeronautical Electronics, Inc., announces a VHF-FM 2-way radio designed for either mobile or base-station use.

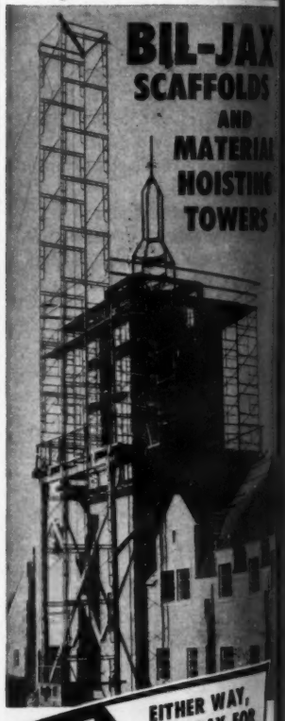
Called Aerotron Model 6N15, the unit measures only 8½ by 11 inches. According to the manufacturer, it rejects unwanted off-frequency signals through a filter of original design and produces exceptional power efficiency. It also features an RF amplifier, gated beam limiter, and a push-pull RF power amplifier.

The Aerotron 6N15 can be operated on any common power source—6 or 12 volts dc or 115 volts ac—without modification. Temporary mobile installations in emergencies reportedly can be made in a matter of seconds with a cigarette-lighter power plug and a clip-on antenna.

For further information write to Aeronautical Electronics, Inc., Dept. C&E, Raleigh-Durham Airport, Raleigh, N. C., or use the Request Card that is bound in at page 18 of this issue. Circle No. 83.

Can't be beat for

SAFETY... SPEED... ECONOMY



RENT OR BUY EITHER WAY, THEY PAY FOR THEMSELVES

On any job... large or small... Bil-Jax has the right scaffold or hoisting tower to get the maximum efficiency from your men and profit from the job. Other equipment includes pipe logs, metal stages and catwalks, shoring jacks, work platforms, swing scaffolds folds.

Sales and rental outlets throughout U. S. and Canada. Write for catalog.

BUILT TOUGH IN THE WORLD **BIL-JAX** Archbold

For more facts, circle No. 371

The Model BG-10 has a payload capacity of 1,500 pounds. It is available with flat pallets for handling materials such as brick.

Road forms offer choice of flange or plain base

Newly improved Rex road forms are announced by the construction machinery section of the Chain Belt Co.

The forms are offered in single or double-wedge design with slotted stake holes for automatic alignment. Stake pockets are closed, thus eliminating concrete and gravel build-up, and all pockets are electrically welded to the form face and base.

Form ends have extra, ½-inch, steel reinforcing plates providing a ½-inch total end thickness, and are cut at an angle to facilitate inside radius work. Full-depth, ¼-inch, steel lock-joint plates assure maximum bearing surface and load transfer.

Rex road forms offer a choice of standard upturned flange or plain base.

For further information write to the Chain Belt Co., Dept. C&E 4701 W. Greenfield Ave., Milwaukee 1, Wis., or use the Request Card that is bound in at page 18 of this issue. Circle No. 36.

Announce concrete cart with 10-foot capacity

The Aeroil Products Co., Inc., announces a new concrete cart.

The Model BG-10 features 4-wheel stability and a "dead-man" brake. It has a capacity of 10 cubic feet for a 1,500-pound payload, and is available with flat pallets for handling materials such as brick and block.

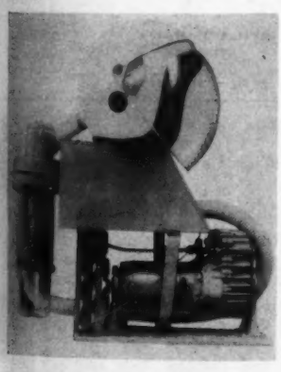
The differential provides driving power to both wheels while still permitting small-radius turns.

Complete bucket dump-out is effected by the large-radius corners in the bucket.

For further information write to the Aeroil Products Co., Inc., Dept. C&E, 69 Wesley St., South Hackensack, N. J., or use the Request Card at page 18. Circle No. 145.

Air-conditioned helmet for equipment operators

An air-conditioned helmet for heavy-equipment operators is announced by the Jamieson Laboratories.



Called Whitecap, the lightweight Fiberglas helmet is equipped with a faceplate of clear shatterproof plastic for protection against flying objects. A flexible vinyl air hose connects the helmet and refrigeration-filter unit, and it is long enough to give the driver full freedom of movement.

The Jamieson unit can be easily moved from one piece of equipment to another. The small electric motor can be wired into any ignition circuit of 12 volts or more, or into a converted 6-volt system.

For further information write to Jamieson Laboratories, Inc., Dept. C&E, 2200 Colorado Ave., Santa Monica, Calif., or use the Request Card at page 18. Circle No. 79.

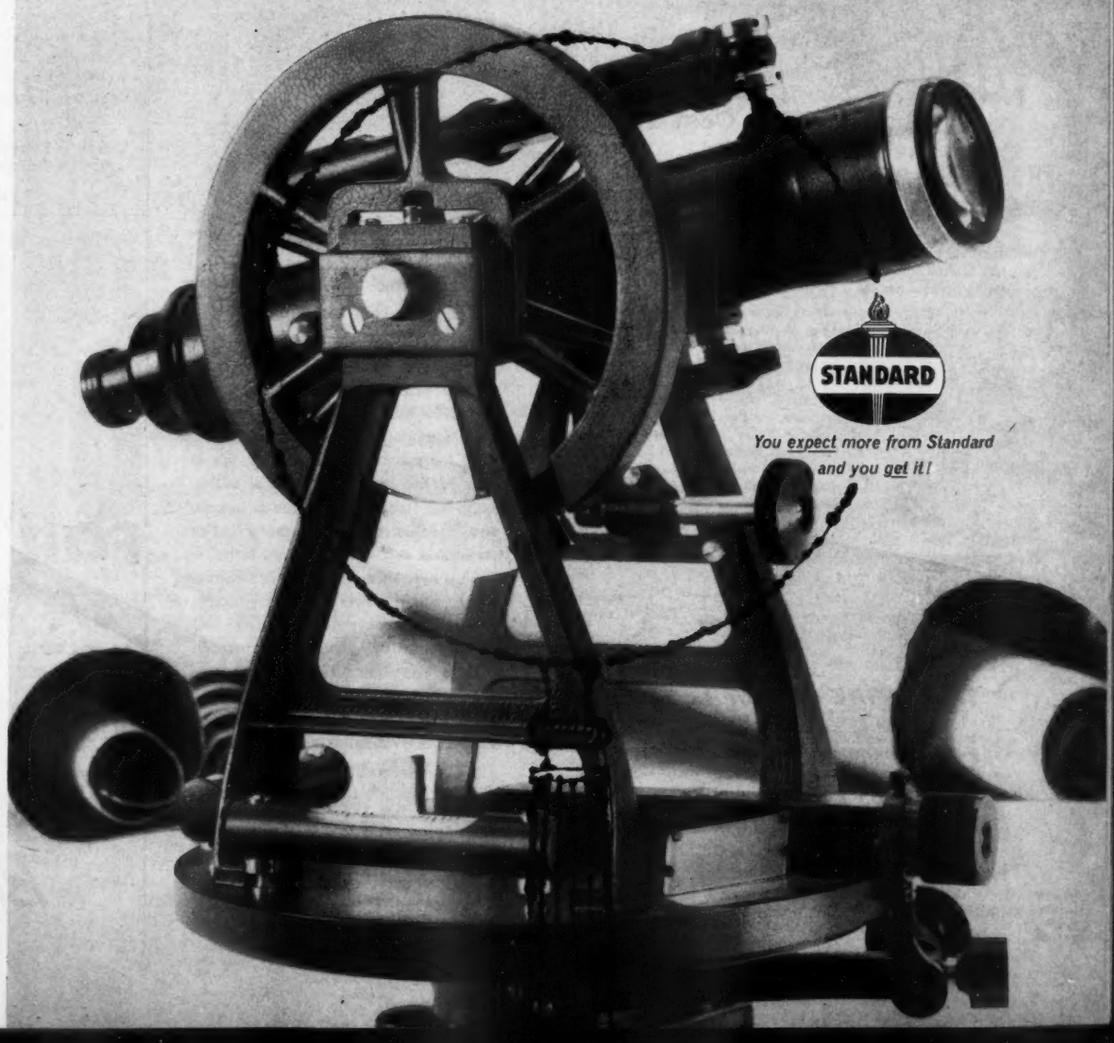
For more facts, circle No. 374→

The opportunity is here for you to build better roads for less money. Wherever roads are built in your State, know the natural resources of the highway's right of way. Investigate and compare *all* road-building materials. Asphalt may be able to help you get the most out of your road-building funds.

Asphalt makes possible numerous savings. A ready source of supply, and a producer that can guarantee deliveries when promised, reduce costs for the highway contractor. Standard Oil has five strategically located refineries from which supplies of Asphalt are delivered *fast* to any place in the 15 Midwest and Rocky Mountain states. Also available from Standard is technical service supplied by experienced Asphalt construction men. These men can help your contractors use Asphalt in ways that permit the greatest possible savings in construction costs. They can and do see that your contractors get supplies on time and when promised. They see that your contractors have an assured source for Asphalt in times when supplies are short as well as when they are plentiful.

Get more facts about (1) the use of Asphalt for highway construction, and (2) how Standard Oil can serve you. Call your nearby Standard Oil office. Or write **Standard Oil Company (Indiana), 910 South Michigan Avenue, Chicago 80, Illinois.**

Investigate: *How you can conserve your State's road-building money by using Asphalt*



Safety light flashes distance of one mile

A new 2-way heavy-duty flasher safety light with large 7-inch heads is announced by the R. D. Fageol Co. Known as Flasher Model HD-2-7, it is said to produce over 100 high-intensity neon flashes per minute. These can be seen over one mile in both directions. Lenses include choice of red, amber, blue, green, clear, or any combination of those colors.

Outstanding features listed by the manufacturer include a Dependa-Pak timer guaranteed against failure for one year. The light employs a long-life 8-cell battery that is said to provide 90 days of continuous flasher operation. It is entirely self-contained and weatherproof. A tamperproof fastener reduces vandalism and theft losses.

The lights are available in 6-volt and 12-volt standard flash units; also, as a 6-volt fast flash, which is 175 to 185 per minute.

For further information write to R. D. Fageol Co., Dept. C&E, P. O. Box 328, Kent, Ohio, or use the Request Card at page 18. Circle No. 46.

Conveying equipment for handling cement

Engineered Equipment, Inc., has announced a complete new line of pneumatic conveying equipment for handling bulk cement and other free-flowing materials.

According to the company, pneumatic bulk-handling systems drastically cut the initial cost of new plant construction, with the need for cement elevators and/or screw conveyors eliminated. Continued savings are achieved through greatly reduced maintenance.

To convert an existing plant, this firm's engineers will design and construct from standard component

Immediate Delivery!

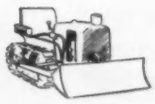
ALLIGATOR TRACTOR

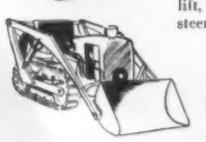
FIELD TESTED!

...a Dependable, Powerful, Light Weight, Low Cost Tractor

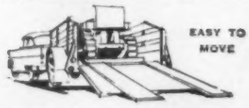
HALF THE WEIGHT...
HALF THE COST...
PACKED WITH POWER
TO MEET 1,000 NEEDS!

The ALLIGATOR weighs only 2,000 lbs., powered with an 18 H.P. 2 cylinder Wisconsin engine, and it delivers unrivalled power per lb.





This is the tractor that construction teams, builders and farmers have needed for years. It provides amazing mobility, utility, economy of cost and economy of operation. It's ideal as an extra clean-up machine on the big job, or as the all-purpose husky on the average job. (It lifts a full ½ yard or 550 lbs.) 18 attachments for forking, scooping, scarifying discing, hoeing, power take-off, dozing, scraping, tilling, high lift loading, electric system, hydraulic system, rear power lift, harrowing, cultivating, etc. Planetary steering, individually controlled tracks.



TALK'S FINE - PROOF IS BETTER

Watch the ALLIGATOR in action. Drive it yourself. Write for name of nearest distributor and to arrange for a *proof of performance* demonstration.

ALLIGATOR EQUIPMENT CO., INC. ST. LOUIS 8, MISSOURI

Subsidiary of MIDWEST MOWER CORP.

Manufacturers of Chain Saws, Tillers & Power Mowers

For more facts, circle No. 375

To obtain further information on any of the products described in this section, circle the number given at the end of the item on the handy Request Card that is bound in at page 18 of this issue.

Heavy-duty chop saw has variety of uses

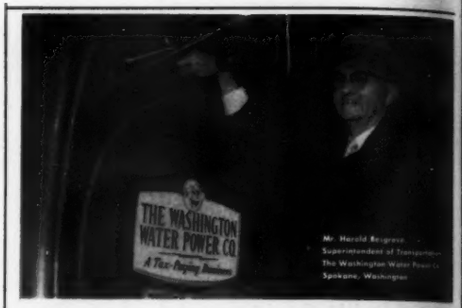
Development of a new all-purpose chop or swing-type heavy-duty metal saw has been announced by the Ty-Sa-Man Machine Co. of Knoxville, Tenn.

The new Ty-Sa-Man chop saw features high-speed cutting of heavy structural members.

The new saw offers 30-hp friction or abrasive cutting and can be used with a grinding wheel. When truck or trailer-mounted, it is said to have wide application in the construction field for producing clean, high-speed cuts of heavy steel structural members, bar stock, heavy wooden beams, heavy cable, pipe, and many other materials.

The new unit offers such features as a more powerful main motor, sealed-bearing spindle, timing belt drive, and a new dynamic suspension system that permits light fingertip feed without springs, counterweights, or adjustments. The screw-operated double vise is quickly adjustable to handle up to 8×8-inch sections or solids.

For further information write to the Ty-Sa-Man Machine Co., Dept. C&E, 1191 White Ave., Knoxville 1, Tenn., or use the Request Card that is bound in at page 18 of this issue. Circle No. 55.



"KIM HOTSTARTS keep us ready to roll"

Like The Washington Water Power Company, KIM HOTSTART engine preheaters will keep your equipment ready to go when the temperature is low. KIM Hotstarts plug into electric circuit when trucks are idle, draw off cold water, heat it, and circulate it back through the engine. High corrosion resistance. Fits gas or diesel engines. See your automotive supplier or write to us....

KIM Hotstart

KIM HOTSTART MFG. COMPANY
West 917 Broadway Avenue Spokane 1, Washington

For more facts, circle No. 376

SERVICE FOR YOUR B&D TOOLS

For genuine Black & Decker repairs check Yellow Pages under "Tools-Electric" for address of nearby Black & Decker

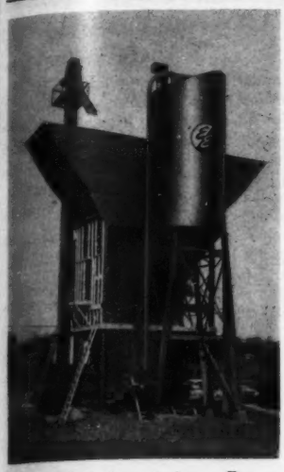
FACTORY SERVICE BRANCH

Free tool inspection when requested • Genuine B&D parts used • Factory-trained technicians handle all work • Standard B&D Guarantee at completion of recommended repairs • Fast service at reasonable cost.

Or write for address of nearest of 48 branches to:
THE BLACK & DECKER MFG. CO., *Dept. S3609, Towson 4, Md.*

Black & Decker
QUALITY ELECTRIC TOOLS

For more facts, circle No. 377



Engineered Equipment, Inc., offers a complete new line of pneumatic conveying equipment that may be installed on existing plants.

parts a complete pneumatic bulk-handling system which, they claim, will operate faster and more efficiently than present equipment.

For further information write to Engineered Equipment, Inc., Dept. C&E, 1001 Linden Ave., Waterloo, Iowa, or use the Request Card at page 18. Circle No. 43.

New dredging agitator pushes large rocks away

Van Gorp Mfg., Inc., announces a medium-weight dredging agitator called the Aggretator.

According to the company, the unit's double-edge teeth cut through stubborn clay seams and make it possible to pump the full depth of the deposit. Its face and side plates push large rocks away from the suction nozzle. Also, the Aggretator loosens cemented deposits, and the loosened material flows into the suction nozzle. The unit is easily installed, and existing power can be used to drive the hydraulic motor.

Sizes available are for 6, 8, 10, and 12-inch suction lines. Standard equipment includes hydraulic motor and reservoir, 4-way valve, two 3-foot hydraulic hoses, slip-on weld flange, and hydraulic cylinder shield.

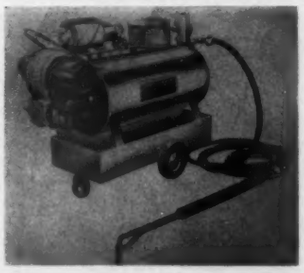
For further information write to Van Gorp Mfg., Inc., Dept. C&E, Box 123, Pella, Iowa, or use the Request Card at page 18. Circle No. 24.

For more facts, circle No. 378→

New steam cleaner features quick start

Development of an instant-heating portable steam cleaner designed for either oil or gas operation has been announced by the Siebring Mfg. Co.

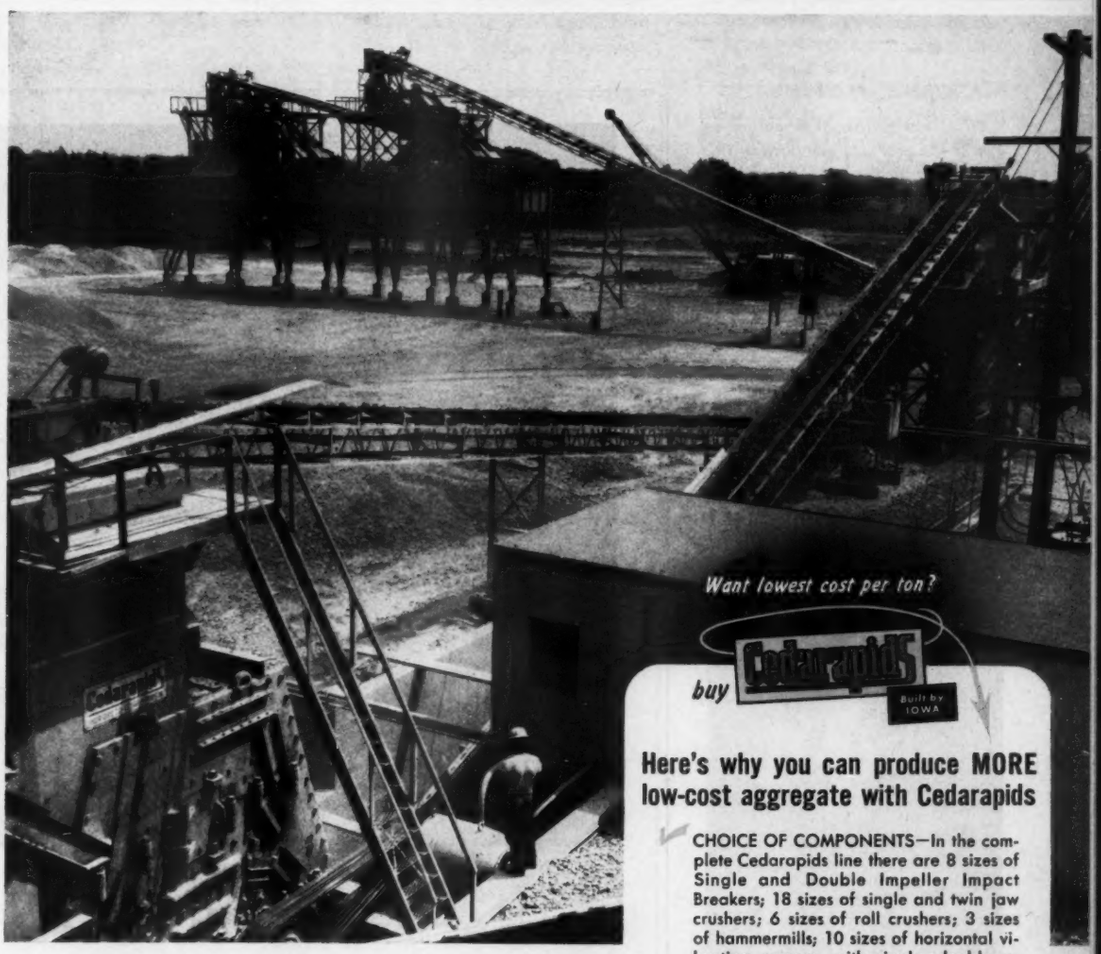
The oil or gas-burning feature is said to make the Model HO-3 the most versatile one of its type in the field. This new cleaner is of 3-coil construction with approximately 82 feet of coils. Fully automatic and completely adjustable from an operating pressure of 5 to 150 psi, it will deliver steam in less than a minute, according to the manufacturer.



This Siebring steam cleaner operates on either gas or oil.

The Siebring HO-3 steam cleaner will handle 35 gph at the pump and 60 gph at the siphon for a total delivery of 95 gph at the nozzle. It is compactly designed and mounted on a rectangular fuel tank with semi-pneumatic wheels and caster.

For further information write to the Siebring Mfg. Co., Dept. C&E, 701 Main St., George, Iowa, or use the Request Card at page 18. Circle No. 44.



Want lowest cost per ton?

buy Cedarapids Built by IOWA

Here's why you can produce MORE low-cost aggregate with Cedarapids

- CHOICE OF COMPONENTS—In the complete Cedarapids line there are 8 sizes of Single and Double Impeller Impact Breakers; 18 sizes of single and twin jaw crushers; 6 sizes of roll crushers; 3 sizes of hammermills; 10 sizes of horizontal vibrating screens, with single, double or triple decks.
- CAPACITY-BOOSTING AUXILIARY EQUIPMENT—Vibrating grizzlies; washing plants; washing attachments; feeders; conveyors; bins.
- BALANCED PRODUCTION—Each Cedarapids component you need is recommended not only as to the type that best handles your quarry conditions, but also to match every other component in the plant for balanced output. Only Cedarapids has the complete line of components to make this possible!
- SKILLED ENGINEERING—Cedarapids engineers have been analysing and solving problems similar to yours for 36 years. Put their production-wise experience to work for you *now!*

Cedarapids "tailors" each stationary plant to each job requirement

Your aggregate producing problem is different from any other in the world. That's why Cedarapids maintains a special engineering department to "tailor" your stationary plant to your particular job for the most profitable production. Take advantage of Cedarapids engineers' field experience, their intimate knowledge of rock and salable rock products, their skill in combining the right components to give you extra tons per hour while saving money on lower maintenance and reduced operating costs. Call in a Cedarapids engineer *before* you plan your plant. Ask your Cedarapids Dealer for details.

IOWA MANUFACTURING COMPANY
Cedar Rapids, Iowa, U.S.A.

THE RIGHT COMPONENTS, PRODUCTION BALANCED FOR EACH JOB, ASSURE HIGHER PROFIT . . .

Twin-Jaw Crushers, exclusive with Cedarapids, increase crushing capacity from 40% to 100% over comparble-size single jaw crushers.

Cedarapids Roll Crushers assure high capacities of small sized aggregate at lowest cost per ton.

Cedarapids Horizontal Vibrating Screens have 12% greater screening area than same-length inclined screens; give 20 to 30% more effective gradation.

Built for sustained heavy-duty loading and trenching operations, the International Wagner No. 465 loader and No. 65 backhoe are available for use with the new International T-340 crawler tractor. With a rated capacity of 3,500 pounds at full lift, the low-profile No. 465 loader features an automatic hydraulic self-leveling action that enables the bucket to return from full dump height to a preset digging angle, using boom control only. Its 64-inch-wide bucket has a capacity of ⅜ cubic yard struck and ⅞ cubic yard fully heaped. The No. 65 backhoe digs and maintains trench grades up to a depth of 10 feet. It can dig efficiently at right angles to the tractor, with a full 180-degree arc of swing. For further information write to the **International Harvester Co.**, Dept. C&E, 180 N. Michigan Ave., Chicago 1, Ill., or use the Request Card at page 18. Circle No. 8.

To obtain further information on any of the products described in this section, circle the number given at the end of the item on the handy Request Card that is bound in at page 18 of this issue.

Announce new line of diamond drills

A new line of diamond drills is announced by the Milwaukee Electric Tool Corp.

Included in the line are two heavy-duty hand-held DymoDrills; four extra-heavy-duty mounted models; a one-man portable DymoRig; and a full line of diamond DymoBits in a wide range of sizes for both core and hole drilling.

The rig-mounted DymoDrills can be quickly interchanged by removing four screws and a twist-lock plug.

A "safe" and "danger" graduated ammeter protects the DymoDrills against overload and increases the life of the DymoBit by indicating the proper drilling speed and amount of pressure applied by the operator. A built-in leakproof water swivel provides a constant flow of water to flush away cuttings and maintain low DymoBit temperature. DymoRigs can be mounted on floors or walls.

For further information write to the Milwaukee Electric Tool Corp., Dept. C&E, 5386 W. State St., Milwaukee 8, Wis., or use the Request Card at page 18. Circle No. 77.

ISBELL TURNS TO TORQMATIC

to get new U.S. Highway #40 ompl

Effortless gear selection—with just a flick of the TORQMATIC selector lever—makes for safer, more alert driving. With TORQMATIC equipment even Isbell's "greenest" drivers become safe, competent drivers.

Isbell Construction Company of Reno, Nevada, ha turned loose their TORQMATIC DRIVE equipment on many a big job. But none bigger – or tougher – than cutting away 2½ million yards of Sierra Nevada mountain as roadbed for the new U. S. Highway #40 link–thru route to the 1960 Winter Olympics at Squaw Valley, California.

A whole army of TORQMATIC-equipped Euclid TD trucks plus S-18 and S-24 scrapers are on the site. Their assignment: helping excavate the 6.7 miles of mountainside-

Climbing back and forth out of the "hole" is tough on any truck. But TORQMATIC equipment takes all the downgrades with practically no wear on the service brakes. A built-in TORQMATIC retarder handles most all braking except for full stops.

When you're hauling over boulder-strewn terrain like this, your tr needs all the protection it can get. Isbell Construction's "Euc" ge from the fluid coupling in their TORQMATIC DRIVES. Result: drive-l replacements are way down—equipment availability is way up.

Offer barricade light for rugged duty

The New NRB Series Flashmasters announced by the Carpenter Mfg. Co. are designed for all heavy-duty applications.

A unique circuit arrangement makes high output possible with economy of operation, according to the manufacturer.

The Flashmasters are available with either 2-way 4-inch lenses or a 360-degree Fresnel dome. The lamp is a special neon coil which, it is claimed, will give thousands of hours of service.

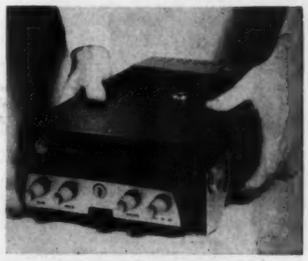
For further information write to the Carpenter Mfg. Co., Dept. C&E, Bradley St., Somerville 45, Mass., or use the Request Card at page 18. Circle No. 59.

Transistorized radios in units up to 75 watts

The General Electric Co. announces the Progress line of transistorized two-way radio equipment, available in units up to 75 watts.

From the 75-watt category, this GE line ranges downward to 30 and 10-watt units in sizes as small as 8⅝ inches wide, 12 inches long, and 4 inches high. Only three tubes are used in lower wattage categories, and four in 30 and 75-watt models.

When on "standby" (full sensitivity, ready to respond instantly to a call with full volume output), the new 75-watt unit uses a negligible 0.040 amps. This is so low, the company points out, that a driver can leave his radio in the standby position continously and the drain on the car's battery would be like the drain of the vehicle's clock.



Compact and easy to maintain, the first units offered are for use in the 150 to 174-mc band.

The equipment has provisions for either 12-volt or 24/12-volt power supplies. All units are interchangeable for negative to positive ground.

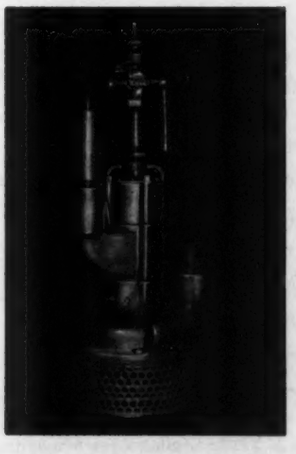
Two-frequency operation is a standard option, providing one or two frequency transmit and/or receive.

The new line also includes a full range of accessories, and provides for various types of optional equipment.

For further information write to the General Electric Communication Products Dept., Section P, Dept. C&E, P. O. Box 4197, Lynchburg, Va., or use the Request Card at page 18. Circle No. 31.

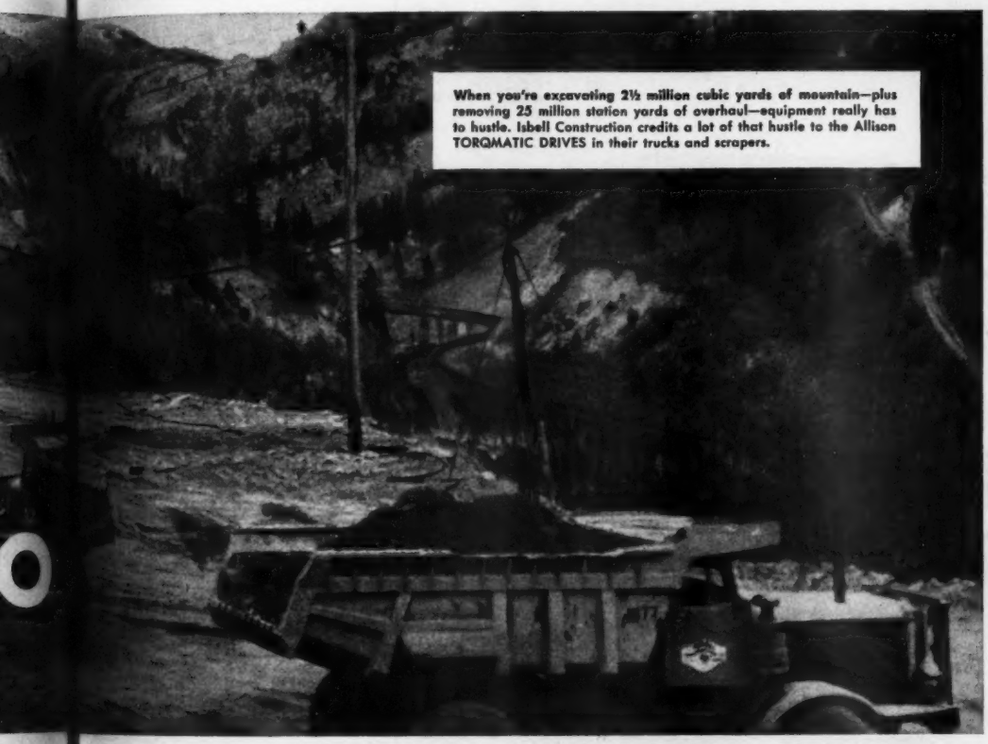
Air-operated sump pump gets all but bottom inch

The Holyoke Division of the Worthington Corp. announces a new air-operated sump pump. Manufactured with a durable, long-life steel casing, the unit weighs 56 pounds. Called the WAP-100, it will operate on a 75-cfm or larger compressor with air pressures that range from 60 to 100 pounds.



A design feature called the air exhaust check valve prevents water from entering the air motor even when the pump runs submerged, while the semiscrew-type impeller removes all but the bottom inch of water in the sump.

For further information write to the Worthington Corp., Holyoke Division, Dept. C&E, 37 Appleton St., Holyoke, Mass., or use the Request Card that is bound in at page 18. Circle No. 29.


When you're excavating 2½ million cubic yards of mountain—plus removing 25 million station yards of overhaul—equipment really has to hustle. Isbell Construction credits a lot of that hustle to the Allison TORQMATIC DRIVES in their trucks and scrapers.

...mpleted by '60 Olympic Game time

...D hauling out 25 million station-yards of overhaul ...s loaded throughout with hefty granite boulders. ...Isbell is running ahead of schedule on this moun... job. And they give full credit to their TORQMATIC ...n." Even "green" drivers have rapidly become pro... ...onal, thanks to foolproof TORQMATIC operation. ...omenally high equipment availability has been ...her real timesaver. Drive-line replacements have been ...back. And there've been comparable savings on service brakes—thanks to the built-in retarder.

"No matter what kind of job we're on—building airports, superhighways or even working open pit mines—we know we can count on our TORQMATIC equipment," declares President C. V. Isbell.

Wouldn't you, too, like to handle record jobs—in record time—at record profits? Check into timesaving, money-saving TORQMATIC DRIVES for your operation!

ALLISON DIVISION OF GENERAL MOTORS, Indianapolis 6, Indiana
In Canada, contact GENERAL MOTORS DIESEL LIMITED, London, Ontario

Allison TORQMATIC® DRIVES

For more facts, use Request Card at page 18 and circle No. 379

WINSLOW—PORTABLE TRUCK SCALE

THE CONTRACTORS' SPECIAL SCALE

For use at temporary and permanent locations—at stock piles and by bituminous material contractors at the job site. Capacity: 15-18-20-30, 40 and 50 tons.

Write us for name of your nearest distributor.

WINSLOW SCALE COMPANY P.O. Box 1198 Terre Haute, Indiana

Announce heavy-duty 10¼-inch power saw

A new 10¼-inch power saw with reserve power, reserve capacity, and many additional features said to answer the needs of contractors, builders, carpenters, and maintenance men has been introduced by the Porter-Cable Machine Co.

The Model 510 is reported to be adaptable to all types of cuts from long rip cuts to compound miters. With Porter-Cable abrasive blades, the 510 will cut many types of materials such as iron, steel, marble, slate, nonferrous metals, cement blocks, building brick, tiles, porcelain, and pressed materials such as Lucite and Bakelite, the company claims.

The Model 510 is powered by a 13-amp motor coupled with a hardened gear drive. The depth of cut at 90 degrees is 3¾ inches, and at 45 degrees a depth of 2¾ inches is attained. The saw is equipped with telescoping blade guard and heavy-duty precision ball bearings.

For further information write to the Porter-Cable Machine Co., Dept. C&E, 700 Marcellus St., Syracuse, N. Y., or use the Request Card at page 18. Circle No. 51.

CAN YOUR PLANT BIG AS IT MAY BE

PRODUCE AS MUCH CONCRETE AS THIS

This BUTLER Central Mixing Plant is simply the extremely portable HP-85 Ready Mixed unit with an additional section to accommodate two turbine-type, high speed concrete mixers.

Production? In excess of 200 yards an hour!

The batching cycles are completely automatic; only one man operates batchers and mixers.

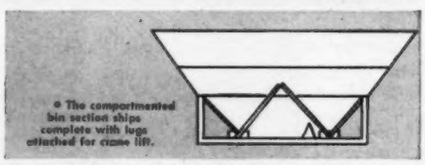
Where such capacities are not required, the BUTLER HP-85 can readily be built for a single turbine mixer.

The HP-85 is ideal for fast, efficient, low-cost batching in commercial ready mixed operations as a permanent plant — or as a unit that can be moved quickly and economically from job site to job site. The cost of erecting is only about a thousand dollars.

And of course, the HP-85 brings all its benefits to pre-cast and pre-stressed concrete operations.

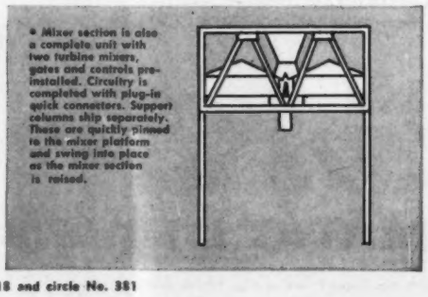
Due to the BUTLER HP-85's remarkable portability, a growing number of ready mixed operators are using it to enter the Highway Program — using either agitating or non-agitating trucks.

What are *your* plans? In any case, plan for the profit-making BUTLER HP-85.

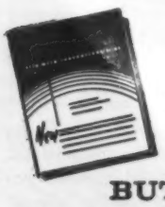


• The compartmented bin section ships complete with legs attached for crane lift.

• Batcher section is a complete unit with all piping, wiring, batchers and automatic controls in-place, ready for plug-in.



• Mixer section is also a complete unit with two turbine mixers, gates and controls pre-installed. Circuitry is completed with plug-in quick connectors. Support columns ship separately. These are quickly pinned to the mixer platform and swing into place as the mixer section is raised.



Here's the reason the HP-85 is erected at lowest cost . . . in hours instead of days

You'll want to know more about the BUTLER HP-85. Send for this illustrated Bulletin. Just write "HP-85" with your name and address on a postcard. We'll do the rest — promptly!

BUTLER BIN COMPANY

971 BLACKSTONE AVE. • WAUKESHA, WIS.

Motor-in-head vibrator for heavy-duty operation

The White Mfg. Co. announces a new motor-in-head 115-volt 180-cycle vibrator. The Model M-21-M is designed for use with any 115-volt 180-cycle generator. The 220-volt M-21 is also available for use with any 200-volt 180-cycle generator.

Motor-in-head design permits one-man operation on every pour. The off-on switch is waterproof and can be completely immersed in concrete. The vibrator will not overheat if accidentally operated out of the concrete, even for extended periods of time.

For further information write to the White Mfg. Co., Dept. C&E, 1227 W. Beardsley Ave., Elkhart, Ind., or use the Request Card at page 18. Circle No. 10.

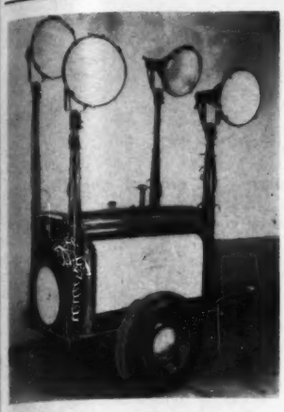
Floodlighting unit generates own power

The 1959 Mobilite, a trailer-type floodlighting unit that generates its own electric power, is announced by Pacific Mercury.

Equipped with four floodlight units, the Mobilite is available with 300,000 or 500,000 candlepower. Each of the floodlights can be individually adjusted to any desired height up to the maximum 18-foot extension. Lights pivot in a complete circle to offer greater flexibility.

Generator capacity of the 300,000-candlepower unit is 6,500 watts, and the unit has eight extra outlet re-

For more facts, use Request Card at page 18 and circle No. 381



Mobilite floodlighting unit.

ceptacles for the operation of power tools or other equipment. The 500,000-candlepower unit has a 10,000-watt-capacity generator, plus 12 extra outlets for operation of equipment.

For further information write to Pacific Mercury, Dept. C&E, 14052 Burbank Blvd., Van Nuys, Calif., or use the Request Card at page 18. Circle No. 6.

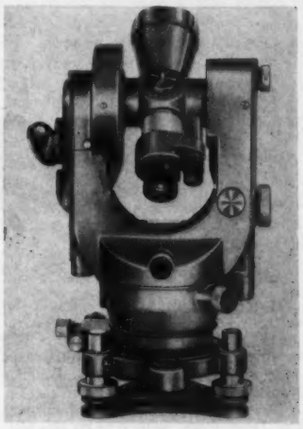
New transit features automatic collimation

Wild Heerbrugg Instruments has available the Model T-1A optical repeating transit said to combine speed, accuracy, and ease of operation.

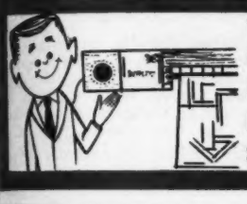
Featured are automatic collimation setting; a rapid-reading microscope mounted next to the telescope; and an internal optical micrometer that allows both circles to be read directly to within 20 seconds and with easy interpolation to 10 and 5 seconds between graduations on both vertical and horizontal scales. In addition, an optical plummet is built into the alidade.

Upper and lower plate motions for repeating and zero-setting are also featured in the T-1A.

For further information write to Wild Heerbrugg Instruments, Dept. C&E, Main and Covert Sts., Port Washington N. Y., or use the Request Card that is bound in at page 18. Circle No. 87.



THIS MAN DEPENDS ON OTHERS TO MEET HIS WHITE PRINT DEADLINES



THIS MAN HAS WHITE PRINTS IN MINUTES FOR PENNIES WITH SATELLITE®

SATELLITE WHITE PRINTER reduces reproduction costs up to 80% . . . and your investment is but $199. Simple to use, with single dial operation in a compact desk or wall mount, the Satellite gives flawless quality white prints up to 30 inches wide from any translucent original . . . at approximately one cent per square foot. Write for details!

GRICO, INC., CUYAHOGA FALLS, OHIO

For more facts, circle No. 382

Electrical power increased on tractors

Announcement of 12-volt electrical systems for the D7 and D8 tractors has been made by the Caterpillar Tractor Co.

The new systems will be standard for the D8 gasoline starting engine, and an attachment for the D8 lighting system. The system is an attachment for both the D7 starting engine and lighting system.

The increase permits higher safe speeds for night operation and retains "flood lamp" illumination, according to the manufacturer.

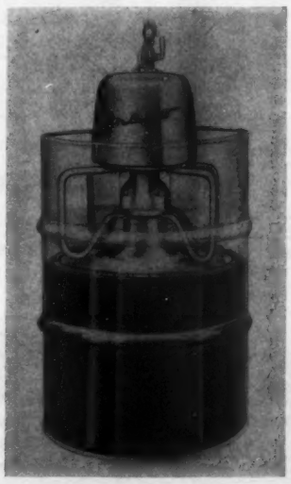
For further information write to the Caterpillar Tractor Co., Dept. C&E, Peoria, Ill., or use the Request Card at page 18. Circle No. 60.

High-volume grease pump for shop, field use

A new, high-volume pump that will transfer up to 200 pounds of grease and similar materials per minute, direct from the original 55-gallon drum, has been announced by the Gray Co., Inc.

The Graco Bulldog transfer pump is reported to eliminate channeling and aeration because it pumps from the top of the material.

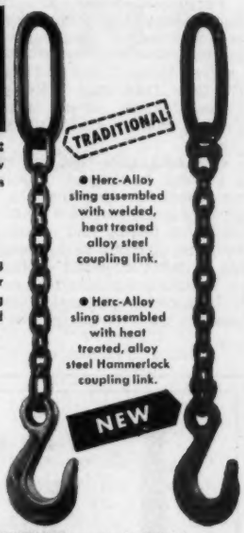
For further information write to the Gray Co., Inc., Dept. C&E, 1035 Sibley St. N. E., Minneapolis 13, Minn., or use the Request Card at page 18. Circle No. 147.



HERC-ALLOY ...the original alloy steel chain

TO SERVE YOU BETTER: Herc-Alloy chain assemblies can now be ordered with either of two types of coupling links.

Hammerlok® the "do-it-yourself" reusable coupling link that enables you to assemble or rebuild your own Herc-Alloy sling chains with all components furnished by your local distributor.



● Herc-Alloy sling assembled with welded, heat treated alloy steel coupling link.

● Herc-Alloy sling assembled with heat treated, alloy steel Hammerlock coupling link.

CALL YOUR CM CHAIN DISTRIBUTOR or write for helpful literature on alloy chain assembly, care, use and inspection.

CM CHAIN

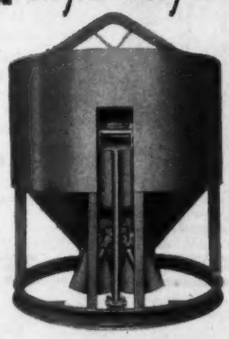
COLUMBUS McKINNON CHAIN CORPORATION
TONAWANDA, NEW YORK
NEW YORK • CHICAGO • CLEVELAND
LOS ANGELES • SAN FRANCISCO
In Canada: McKinnon Columbus Chain Limited, St. Catharines, Ontario

For more facts, circle No. 384

NEW! JOHNSON® light-weight CONCRETE BUCKETS

SIZES:	NET WEIGHT*
½ cu. yd.	355 lbs.
¾ cu. yd.	455 lbs.
1 cu. yd.	700 lbs.
1½ cu. yd.	840 lbs.
2 cu. yd.	1075 lbs.

*approx.



Light in weight, low in cost, this all-new series of concrete buckets from Johnson gives high ratio of capacity-to-weight. Makes each pour more profitable for you! Features: all-welded steel hopper, frame. All working parts above discharge point and well within bucket outline—protected during work, storage, shipment. 50° slope of cone bottom gives complete discharge of medium-slump concrete. Short-stroke, easy leverage handle. Double-clam gates. Stainless steel shafts in nylon bearings. Write today!

— — — — Mail to C. S. JOHNSON CO., Champaign, Ill. — — — —

Send more information on ..... cu. yd. light-weight concrete bucket

NAME _____

COMPANY _____

STREET _____ J919 C&E

CITY, STATE _____

JOHNSON

CHAMPAIGN ILLINOIS • STOCKTON CALIF

For more facts, use coupon or circle No. 385

Re-Power With FUNK Modular Units

FUNK TORQUE CONVERTERS

Extend the life of your engines, prevent stalls, eliminate damaging shock loads — re-power with FUNK Torque Converters. Compact units, fit SAE housings. FUNK Standard Flange System easily adapts other FUNK units for your power needs.

FUNK GEAR REDUCTIONS

Small, popular-make high speed engines equipped with low-cost FUNK Gear Reductions develop the same power output at substantial savings over large expensive slow speed engines. Eliminate expensive and dangerous V-belt and chain drives. Exclusive FUNK Straddle Mounted Pinion. Proved Performance.

Consult Your Dealer or Write

FUNK MFG. CO. P.O. BOX 577-B COFFEYVILLE KANSAS

For more facts, circle No. 383

Product LITERATURE

To obtain free copies of any of the literature described in the following section, circle the designated number on the Request Card at page 71.

Hydraulic backhoe—a folder describing the Hy-Hoe Model 380, a ⅜-yard all-hydraulic backhoe. Gives brief specifications and is illustrated with on-the-job photographs. Bulletin No. 581.

Write to the Hydraulic Machinery Co., Dept. C&E, 3629 W. Elm St., Milwaukee, Wis., or use the Request Card at page 18. Circle No. 4.

Forms—a folder on Uni-Form panels. Emphasizes simplicity of assembly. Several on-the-job photographs.

Write to the Universal Form Clamp Co., Dept. C&E, 1238 N. Kostner Ave., Chicago 51, Ill., or use the Request Card at page 18. Circle No. 107.

Consolidation-test apparatus—a bulletin on Soiltest consolidation-test apparatus. Describes the various types of loading devices used for consolidation testing and includes a description of a new table model called the Levermatic, which applies a load of 20 tons per square foot on a 2½-inch-diameter specimen. Data on accessories such as specimen trimmers, loading weights, porous stones, and data sheets.

Write to Soiltest, Inc., Dept. C&E, 4711 W. North Ave., Chicago 39, Ill., or use the Request Card at page 18. Circle No. 98.

Back-rippers—a folder discussing the Preco line of back-rippers for all types and sizes of bulldozers. Includes installation data and job-analysis reports.

Write to Preco, Inc., Dept. C&E, 6300 E. Slauson Ave., Los Angeles 22, Calif., or use the Request Card at page 18. Circle No. 123.

Prestress strand gripping devices—a report on a study of the effects of gripping devices on the breaking strength of 7-wire strand for prestressed concrete. Gives data on tests measuring elongation and breaking point on ⅜-inch and 7/16-inch diameter strand, using three main types of Laclede strand chunks.

Write to the Laclede Steel Co., Dept. C&E, Arcade Bldg., St. Louis 1, Mo., or use the Request Card at page 18. Circle No. 16.

Hot-weather concreting guide—literature on the placement of quality concrete in extreme hot weather. Covers before, during, and after placing operations and explains preparation of forms; erection of shades; ordering and scheduling ready-mix concrete; protection of concrete during finishing; and curing and care of test cylinders. Bulletin RM-67b.

Write to The Master Builders Co., Dept. C&E, 7016 Euclid Ave., Cleveland 3, Ohio, or use the Request Card at page 18. Circle No. 94.

Rotary-gun drilling machines—an illustrated bulletin on the complete Stardrill-Keystone line of rotary-gun drilling machines. Presents general specifications and descriptions including capacities, engines, air compressors, pumps, derricks, leveling jacks, and floodlights. Catalog No. KS-635.

Write to the Stardrill-Keystone Co., Division of Koehring Co., Dept. C&E, P. O. Box 959, Springfield, Ohio, or use the Request Card at page 18. Circle No. 128.

Foundation equipment—literature on Armco Hel-Cor pile shells, steel pipe piles, and steel caissons. Illustrations of typical installations. Bulletin FB-7959.

Write to Armco Drainage & Metal Products, Inc., Dept. C&E, 703 Curtis St., Middletown, Ohio, or use the Request Card at page 18. Circle No. 117.

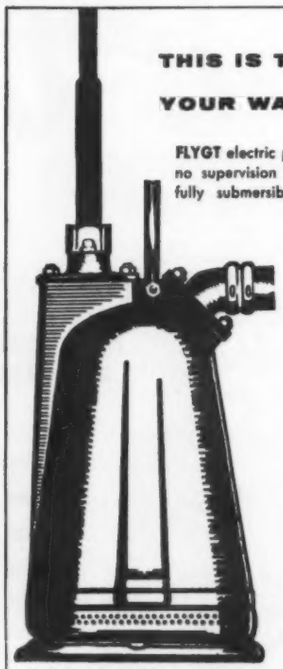
Lever hoist—a brochure offering complete information about the five models of the new MA Series Coffing sealed ratchet lever hoist. Lists specifications and features of these units ranging from ¾-ton to 6-ton capacities. Bulletin ADH-78.

Write to the Coffing Hoist Division, Duff-Norton Co., Dept. C&E, 000 Water St., Danville, Ill., or use the Request Card at page 18. Circle No. 21.

Carbon-dioxide welding—a 24-page booklet on Aircomatic welding of mild steel and low-alloy steels with carbon dioxide (CO_2) shielding gas. Provides an illustrated description of both the conventional CO_2 and the recently announced Dip Transfer CO_2

THIS IS THE END OF

YOUR WATER TROUBLES!



FLYGT electric pumps work round the clock with practically no supervision or maintenance. They are fully portable, fully submersible — need no priming, no installation.

FLYGT pumps can run dry without damage — take a high proportion of solids without clogging.

Other FLYGT pumps:
B-80L: 3" hose; 6 hp; 185 lbs; 330 GPM; max. head 170 ft.
B-80M: only 9" diameter; 3" hose; 6 hp; 140 lbs; 300 GPM; max. head 115 ft.
B-150/200L: 6" or 8" hose; 65 hp; 1,200 lbs; 3,000 GPM; max. head 220 ft.

HIGHER HEADS WITH FLYGT PUMPS IN TANDEM.

FLYGT

B-38L data: 1½" hose; 1.8 hp; 79 lbs; 75 GPM; max. head 90 ft.

(Clip and attach to your letterhead)

East of the Mississippi:
STENBERG MANUFACTURING CORPORATION
HOOSICK FALLS, N.Y.

West of the Mississippi:
Stanco MFGS. & SALES INC.
1666 NINTH STREET
SANTA MONICA, CALIF.

( ) Please rush full information on FLYGT pumps.
( ) We are interested in a demonstration.

Required capacity:..... GPM at.....ft. head

Signature .....

1222

For more facts, use coupon or Request Card at page 18 and circle No. 386

TRANSPORT TRAILERS DELIVER

THE QUALITY LINE OF DEPENDABLE TRAILERS FOR EVERY HAULING NEED!

MODEL XTT

Tandem axle tilt trailer (tow type), capacities 13 through 20 tons.

MODEL PTX

Heavy-duty tandem axle with adjustable bolsters. Telescopes from 16' to 30' from tractor.

MODEL GXTT

Gooseneck type, tandem axle tilt-trailer. Capacities 14 through 22 tons.

MODEL KSO-D

Dual axle drop bed semi, capacities 15 through 30 tons. Drop deck or flat deck.

MODEL FX

Heavy-duty tandem axle, spring mounted platform or float.

MODEL MSO-D

Multiple axle drop bed semi, capacities 35 through 75 tons. Drop deck or flat deck.

MODEL GPR

Removable gooseneck. Tandem, triple or trunnion axles. Flat or drop decks, or as beam trailers.

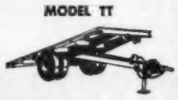
MODEL GFX

Tandem axle. Capacities 16 through 35 tons. Drop deck or flat deck.

MODEL T-8-18

14 or 18 foot length between the wheel tilt trailer. 8-10 ton capacity.

MODEL TT



Heavy-duty tilt trailer. Capacities 6, 8 and 10 tons.

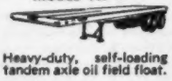
MODEL KS-F

Single axle flat bed semi, capacities 10 through 20 tons. Drop deck or flat deck.

MODEL GTX

Triple axle, 6 dual wheels. Capacities 25 through 45 tons. Flat or drop deck.

MODEL PX-O



Heavy-duty, self-loading tandem axle oil field float.

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Vibrating screen capacity slide ...le—a slide rule to figure vibrating ...reen capacities. Takes into con...deration kind of material to be ...reened; size of screen openings; ...rcentage of oversize in the feed; ...rcentage of feed less than one-half ...e of screen openings—whether top, ...cond, or third deck; shape of screen ...penings; and screen slope.
Write to the Smith Engineering ...rks, Dept. C&E, 532 E. Capitol ...rive, Milwaukee 1, Wis., or use the ...equest Card at page 18. Circle No. ...

Blocks and sheaves—a catalog ...ntaining complete specifications in...ding tonnage capacities and rec...mmended wire-rope sizes for Sauer...an Durolite blocks and sheaves. ...otographs and drawings illustrate ...rt. Catalog I.
Write to Sauerman Bros., Inc., ...pt. C&E, 624 S. 28th Ave., Bell...wood, Ill., or use the Request Card at ...ge 18. Circle No. 108.

Sand classifying—a brochure de...ribing the Wemco Sand-Sort, a ...ee-settling classifying tank for re...oving excess slimes and water from ...sand slurry, and capable of elimi...ating unwanted size fractions and ...oduction of two or more sands of ...fferent size gradations.
Write to Wemco, a division of ...Western Machinery Co., Dept. C&E, ...50 Fifth St., San Francisco 7, Calif., ...r use the Request Card at page 18. ...Circle No. 125.

Rollers—a brochure describing ...nd illustrating the complete Fergu...on line of rollers. Types include steel-...heel, self-propelled pneumatic, pull-...ype pneumatic, and tamping. Fea...ures the Model SP96M self-propelled ...amping roller with four GE 125-hp ...iesel engines. Also gives data on ...lades for every make and model of ...aintainer, grader, scraper, bulldozer, ...nd front-end loader.
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Concrete admixture—a bulletin detailing how the use of Pozzolith admixture will give concrete increased flexural, bond, and compressive strength; effectively entrained air; increased workability and durability; reduced shrinkage and permeability; initial retardation and resistance to scaling. Text illustrated with charts, graphs, and photos. Bulletin P-36B.
Write to The Master Builders Co., Dept. C&E, 7016 Euclid Ave., Cleveland 3, Ohio, or use the Request Card at page 18. Circle No. 127.

Electric plant—illustrated literature on the Pioneer Gen-E-Motor Model E-3500-PDV direct-coupled electric plant. Includes details of construction and data on optional equipment.
Write to the Pioneer Gen-E-Motor Corp., Dept. C&E, 5841 W. Dickens Ave., Chicago 39, Ill., or use the Request Card at page 18. Circle No. 75.

Forming hollow-slab voids—a folder describing Jay-Tubes for use in forming voids in hollow-slab bridges. Text illustrated with close-ups of these Freezurboard tubes, as well as on-the-job photographs and dimensional drawings. Contains illustrated description of flotation test.
Write to the Construction Products Division, Lawrence Paper Co., Dept. C&E, Lawrence, Kans., or use the Request Card at page 18. Circle No. 113.

Air vibrators—a bulletin detailing applications of the Navco one-piece air vibrators. Illustrates units operating successfully in hazardous atmospheres, in extreme-moisture or magnetic-dust conditions, and outside in severe weather. Includes specifications and mounting information on eight different models. Catalog No. 303.
Write to The National Air Vibrator Co., Dept. C&E, 435 Literary Road, Cleveland 13, Ohio, or use the Request Card at page 18. Circle No. 122.

To obtain the literature described on this page, write to the manufacturer or circle the designated number on the Request Card at page 18.

Scaffolding, shoring systems—literature describing the Vega Self-Lock scaffolding and shoring systems. Illustrated with close-ups of major components and on-the-job photographs. According to the literature, the frames are erected easily and quickly, and the free-standing towers are strong, rigid, and secure.
Write to Vega Industries, Inc., Dept.
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(Continued from preceding page)

C&E, 1200 E. Brighton Ave., Syracuse 5, N. Y., or use the Request Card at page 18. Circle No. 88.

Bearing pads—literature on Kon-X bearing pads for the reduction of vibration and excessive wear caused by continual stress and movement of cranes, derricks, and other construction machinery. Includes specifications.

Write to the Keasbey & Mattison Co., Dept. C&E, Ambler, Pa., or use the Request Card at page 18. Circle No. 82.

Portable batch plants—an illustrated bulletin giving complete information on Rex Porto-Plant Models 60 and 125 and their components, including portable aggregate bins; portable cement storage bins; batching equipment; portable belt conveyors; screw conveyors; and advanced control systems. Bulletin No. 59210.

Write to the Chain Belt Co., Dept. C&E, 4701 W. Greenfield Ave., Milwaukee 1, Wis., or use the Request Card at page 18. Circle No. 95.

Diesel maintenance—literature on how to care for diesel engines to obtain maximum performance, economy, and engine life. Includes special tips on how to maintain engines to reduce downtime and repair costs.

Write to the Cummins Engine Co., Inc., Dept. C&E, Fifth St., Columbus, Ind. or use the Request Card at page 18. Circle No. 126.

Rubber-tire crane—a booklet describing the Moto-Crane Model MC-430, a 30-ton-capacity unit for use as a crane, shovel, dragline, clamshell, or hoe. Well illustrated with on-the-job photographs and close-ups of important components. Form No. 35735-9.

Write to The Thew Shovel Co., Dept. C&E, 28th and Fulton Road, Lorain, Ohio, or use the Request Card at page 18. Circle No. 111.

Expansion joints—an illustrated bulletin on the nomenclature and selection of Badger S-R Joints, as a guide to making inquiries for specific applications. Contains general information on flanges, liners, covers, temperature ratings, and other material.

For further information write to the Badger Mfg. Co., Expansion Joint Division, Dept. C&E, 230 Bent St., Cambridge 41, Mass. or use the Request Card at page 18. Circle No. 124.

Lubricants—an illustrated folder providing detailed information on D-A universal lubricants. Lists such benefits as elimination of sludge, moisture, and corrosion; high, natural, stable viscosity index; reduced leakage and consumption; retention of additives and elimination of foaming.

To obtain the literature described on this page, write to the manufacturer or circle the designated number on the Request Card at page 18.

Write to the D-A Lubricant Co., Inc., Dept. C&E, 1331 W. 29th St., Indianapolis 23, Ind., or use the Request Card at page 18. Circle No. 1

Mower attachment—literature on the construction and operating characteristics of the Hydro-Clipper heavy-duty mower attachment for Allis-Chalmers Models B, IB, CA, and WD-45 tractors. Text illustrated with photographs. Specifications furnished.

Write to the Triumph Machine Co., Dept. C&E, P. O. Box 110, Hackettstown, N. J., or use the Request Card at page 18. Circle No. 110.

Battery maintenance—a 36-page handbook of technical instruction and engineering data on the care of motive-power storage batteries. Covers all phases of battery theory, operation, and maintenance. Well illustrated. Bulletin GB-1896.

Write to Gould-National Batteries, Inc., Dept. C&E, Trenton 7, N. J., or use the Request Card at page 18. Circle No. 114.

Portable blast-hole drill—an illustrated brochure describing the Failing Blast Master rotary air-drilling unit for fast blast-hole drilling. According to the literature, the machine is designed especially for drilling with down-the-hole tools. Complete specifications included. Bulletin No. 58-3.

Write to the George E. Failing Co., Dept. C&E, P. O. Box 872, Enid, Okla., or use the Request Card at page 18. Circle No. 116.

Chain connecting links—a brochure on Wedglok heavy-duty connecting links. Easy-to-read chart lists sizes, approximate weight, and working load limit. Also contains dimensional drawings of symmetrical and pear-shaped styles. Bulletin No. 3101.

Write to Special Products Division, Interstate Drop Forge Co., Dept. C&E, 4053 N. 27th St., Milwaukee 16, Wis., or use the Request Card at page 18. Circle No. 121.

Off-highway trucks—a 24-page brochure detailing the design and operational features of the new LeTourneau-Westinghouse Haulpak off-highway truck line. Generously illustrated.

Write to the LeTourneau-Westinghouse Co., Dept. C&E, 2301 N. Adams St., Peoria 2, Ill., or use the Request Card at page 18. Circle No. 115.

Concrete cracking—a folder designed to help concrete producers control concrete cracking. Shows examples of eight common types of cracks and explains the cause of each. Also includes sketches of magnified sections of concrete, showing six of the common types of cracks and indicating their probable causes.

Write to the Alpha Portland Cement Co., Dept. C&E, 15 S. Third St., Easton, Pa., or use the Request Card at page 18. Circle No. 84.

Land-clearing equipment—a brochure telling how land-clearing problems are solved by Fleco specialized equipment for Caterpillar track-type tractors. Describes and illustrates the Fleco line of land-clearing equipment, its features and applications. Includes material on the firm's new multi-application rake and on the new Traxcavator rake.

Write to the Fleco Corp., Dept. C&E, P. O. Box 2370, Jacksonville, Fla., or use the Request Card at page 18. Circle No. 81.

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Diamond core bits—a folder on ffman diamond-impregnated Nar- Kerf core bits. Also gives data on rrels and adapters. Illustrated with otographs; specifications and prices cluded.
Write to Hoffman Bros. Drilling Co., c., Dept. C&E, P. O. Box 426, Punx- wawney, Pa., or use the Request rd at page 18. Circle No. 120.

Wire rope—a pamphlet on Jones Laughlin CenterFit wire rope. De- ribes the various applications for hich the product is best suited and cludes tables giving specifications r strength and size. Also contains a ief guide on how to order wire rope.
Write to the Wire Rope Division, nes & Laughlin Steel Corp., Dept. &E, 3 Gateway Center, Pittsburgh , Pa., or use the Request Card at ge 18. Circle No. 92.

Calcium chloride—a summary of e benefits of calcium chloride for paved roads, and a guide to its es. Includes year-round mainte- nce procedures, a description of a pical calcium-chloride road, and a mparison of routine maintenance d calcium-chloride maintenance. ief SB-2.
Write to the Calcium Chloride In- itute, Dept. C&E, 909 Ring Bldg., ashington 6, D. C., or use the Re- est Card at page 18. Circle No. 103.

Trailer bodies, hoists—a booklet ving comprehensive information on allon dump-trailer bodies and ists designed to aid users in choos- g the correct equipment for spe- fic on and off-the-highway hauling d dumping applications. Describes uipment, including a variety of ht, medium, and heavy-duty dump- iler bodies and hoists, plus a wide lection of chassis designs, suspen- ons, understructures, and hydraulic unting kits.
Write to the Galion Allsteel Body ., Dept. C&E, Galion, Ohio, or use e Request Card at page 18. Circle o. 106.

Arc-welding cable connections, ccessories—a catalog describing the mplete Tweco line of arc-welding ble connections and accessories. Il- strated with photographs. Furnishes ief specifications, prices. Catalog o. 11.
Writ to Tweco Products, Inc., Dept. &E, P. O. Box 666, Wichita, Kans., r use the Request Card at page 18. rcle No. 78.

Dc generators—a bulletin discussing the complete Kato line of heavy-duty dc generators available in sizes from 500 watts to 40 kw with various voltages throughout the line. Lists 50 standard models. Illustrated with chart, photographs, and dimensional drawings. Form DC-459.
Write to the Kato Engineering Co., Dept. C&E, 1415 First Ave., Mankato, Minn., or use the Request Card at page 18. Circle No. 69.

Concrete bucket—a fact sheet listing the benefits of the new Morin semiautomatic concrete bucket. Available in hydraulic or air-operated models, the unit is offered in sizes from ½ to 8 cubic yards, according to the literature. Text illustrated with photographs.
Write to the G. G. Morin Co., Dept. C&E, 832 Dewey St., West Springfield, Mass., or use the Request Card at page 18. Circle No. 19.

To obtain the literature described on this page, write to the manufacturer or circle the designated number on the Request Card at page 18.

Welding carbon products—a manual describing in detail the use of welding carbon products—rods, plate, and paste—to facilitate welding repair work. Illustrations show basic applications. According to the literature, the use of carbon plate, rod, and paste eliminates the need for many jigs and fixtures, especially on small jobs.
Write to the Arcair Co., Dept. C&E, Box 431, Lancaster, Ohio, or use the Request Card at page 18. Circle No. 12.

Tractor-scraper unit—an illustrated brochure outlining the operating features of the new Caterpillar No. 619 wheel tractor and No. 442 Lowbowl scraper. Explains each individual machine component; emphasizes the unitized power train, swing-away dash, and planetary final drive. Tractor and scraper specifications included. Form No. 33451.
Write to the Caterpillar Tractor Co., Dept. C&E, Peoria, Ill., or use the card at page 18. Circle No. 13.

Vibratory rollers—a fact sheet describing the new Western vibratory rollers for compacting of all granular subbase and fill. Gives general roller specifications and is illustrated with photographs.
Write to the Western Equipment Division, Douglas Motors Corp., Dept. C&E, 1234 N. 62nd St., Milwaukee, Wis., or use the Request Card at page 18. Circle No. 62.

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For more facts, use Request Card at page 18 and circle No. 393

Big concrete plant ready for Glen Canyon projec

The big job of placing concrete for Glen Canyon Dam and powerhouse is set to start. While excavation between the keyways is being finished, crews complete the big concrete plant that will supply the more than 5 million yards of concrete for the project. The batch plant is located on a bench, right. Curved sections on either side of the canyon are for the spillways. Two 50-ton cableways will handle the placing operation.

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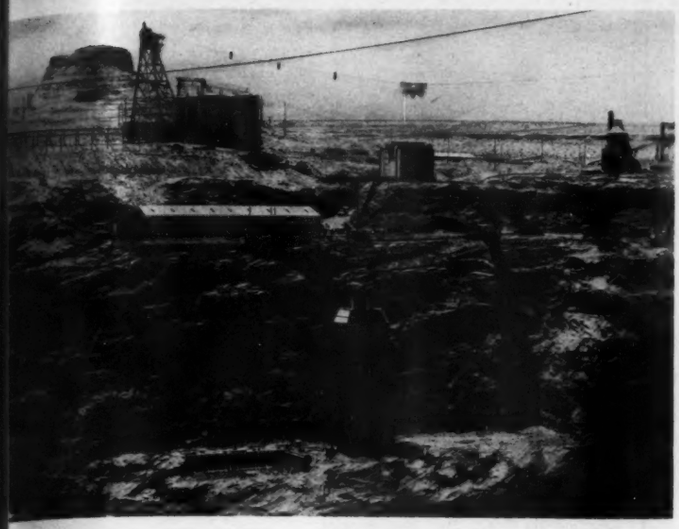


The big batch plant, under construction on the west rim of the canyon, is located on a bench hewed out of the canyon wall. Some 280 feet above, on the rim, is the ice and compressor plant that will be used to cool the concrete, plus the cooling tower and cement and pozzolana silos.

Setup is located on bench excavated into canyon wall;

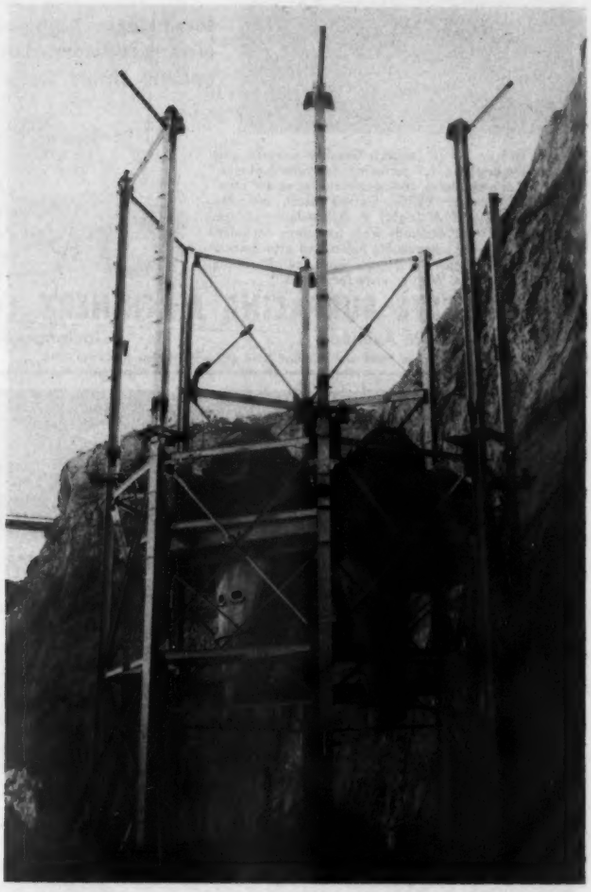
downgrade delivery of cement, aggregate saves money

Fast concrete work at Glen Canyon Dam ultimately depends on the plant supplying the mix. It's a big plant, and crews have been busy this past winter and spring completing the huge setup for the scheduled start of concrete placement last month. During the next four years, the plant will produce more than 5 million cubic yards of concrete for the construction of the dam and powerhouse.

The six T. L. Smith 4-yard mixers in the completely automatic Noble plant are capable of producing 480 cubic yards of concrete per hour, and all other components of the setup are geared to match that speed. The 600-ton-per-hour refrigerating system that keeps the mix in the required range of 40 to 50 degrees F during placement also supplies coolant to the blocks of mass concrete.

The plant itself stands on a relatively tiny, practically inaccessible bench hewed out of the side of the canyon wall. The plant foundations on this bench are some 280 feet lower than the foundations for the cement silos on the bank above. While the excavation of this bench was an expensive and time-consuming job, savings will accrue throughout the years of operation because of the all-downgrade delivery of cement and aggregates.

(Continued on next page)



The Noble batch plant houses six T. L. Smith 4-yard mixers capable of producing 480 cubic yards per hour for dam and powerhouse. Materials, proportioned in separate weigh batchers, will be discharged into a collection hopper. The batch will be fed to one of the mixers by swivel chute.

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THE WORLD'S FINEST LOW COST PLANT AND JOB-SITE TESTERS For CYLINDERS CUBES BLOCKS BEAMS PIPE

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On Ohio's North-South Thruway, too!

On more and more highway construction projects you'll find trench filling operations being handled quickly and efficiently by Power-Pack Hopper Conveyors. Along the North-South Thruway in Ohio 15 of these low cost machines are speeding up the job and saving money for their owners. On many sections of this new interstate highway a Power-Pack and one operator handle all of the fill hauled by big tandem axle trucks. Each truck is unloaded in five minutes or less, with the material being transferred directly into the trench without spillage and to the depth required. Production of 800 feet per hour is easily maintained. If your job requires trench filling, road widening or shoulder work get the facts on the Power-Pack model that fits your requirements. See your dealer today or write direct for information and specifications.

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For more facts, use Request Card at page 18 and circle No. 397

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for: bridges, highways, airport runways, dams, culvert, floors, walls.

Model H-8 and H-10 (above). Gasoline powered unit especially designed for surfacing concrete highways, runways, streets, floors. Includes exclusive power take-off for attaching "BERG" flexible shaft surfacing equipment. Model A (right) is lightweight, electric powered unit that suspends from operator's shoulder. Equipped with interchangeable heads and attachments for surfacing bridges, buildings, dams, culvert, walls or similar surfaces. Wire or write for details.

CONCRETE SURFACING MACHINERY CO.
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For more facts, use Request Card at page 18 and circle No. 398

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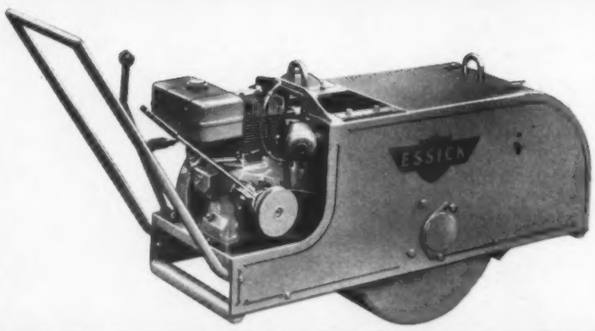

VR-13-W SELF PROPELLED VIBRATING COMPACTOR

TRENCH BACKFILLING
ASPHALT PATCHING

Superior compaction of both soil and asphalt is assured by this dual-purpose 13" wide vibrating compactor. Weighing only 630 lbs., the Essick VR-13-W puts out 4500 one ton blows per minute . . . on soil . . . on asphalt . . . or on both.

ON SOIL

Where specified densities are extreme and exacting, the high frequency "stomping" of the Essick VR-13-W shakes and jostles the soil particles into a dense, homogeneous mass. Compaction is at a maximum because each particle is "clobbered" and rattled until it retreats into any and every space available. With this compact tool, high performance compaction can be accomplished in the relatively inaccessible confines of ditches, around foundations, and bridge abutments. Because of this active and vibrant compaction, the user obtains superior compaction production, maximum soil densities, and the lowest production costs.

ON ASPHALT

Asphalt patching is now a fast, simple, and permanent application with the Essick VR-13-W Vibrating Compactor. No need to put down a temporary patch, as the high frequency vibrations smack the asphalt into a carpet of optimum density. This patch is immediately permanent and will not settle; because the hammering vibrations push down the mass—not from sheer weight, but from the constant impact of over 4500, 2630 lb. blows per minute. As a dual purpose tool, it immediately and permanently compacts the backfill and the trench topping patch, making it a one step operation—soil and asphalt. One or two passes produces optimum density in record time and at lowest cost, and traffic can immediately roll over the patch without any damage.

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For more facts, use Request Card at page 18 and circle No. 399

(Continued from preceding page)

Aggregate storage

The bottom-dump truck-trailers delivering the six classes of coarse aggregates from the heavy-media aggregate plant discharge their loads into a drive-over surge hopper at the dam site. A 384-foot-long inclined conveyor carries the materials up the 17-degree grade to a long shuttle conveyor mounted on a 90-foot-high steel trestle. The shuttle conveyor operates back and forth along the 900-foot-long trestle to place the aggregates in the six stockpiles.

The two types of sand are delivered to another hopper, and a radial stacker places them in their respective stockpiles. The aggregate stockpiling setup was supplied by Pioneer Engineering Works, Inc., Minneapolis, Minn., and the sand-stacking system was furnished by Barber-Greene.

Beneath these stockpiles is some 1,300 feet of horseshoe-shaped Armco Multi-Plate recovery tunnel, 8.5 feet high. Remotely controlled air-operated clam gates in the tunnel roof provide for delivery of the desired material to the Barber-Greene belt conveyors inside the tunnels.

A Barber-Greene 36-inch conveyor carries the materials about 500 feet from the mouth of the recovery tunnel past the site of the temporary concrete plant to the beginning of the wet belt. For the next 250 feet, the belt is covered and insulated. A spray of ice water plays on the aggregates as they pass through this section.

The coarse aggregates then pass through a dewatering screen and then on to a 6 × 14-foot rescreen at the top of the 217-foot-high batching plant where fines are removed from the aggregate before the materials go to the eight compartments of the 3,000-ton aggregate storage bins of the plant. These bins provide storage for four sizes of screened gravel ranging from 6-inch to No. 4, two sizes of gravel processed through the heavy-media plant, and two types of sand.

Cement handling

Cement and pozzolana for the concrete are being delivered from the new plant of the American Cement Corp. at Clarkdale, Ariz., by truck transport. From the drive-over receiving hoppers, bucket elevators and air slides carry the materials to seven 10,000-barrel storage silos. Three of these are earmarked for pozzolana and four for cement.

Cements are fed by 14-inch reclaiming screws to Fuller twin 12-inch Airslides. These carry them to a pair of 700-barrel silos attached to the outside of the concrete plant. Screws feed the cement and pozzolana from these intermediate storage silos to individual weigh hoppers that weigh out the required amount of each material for the mix being produced.

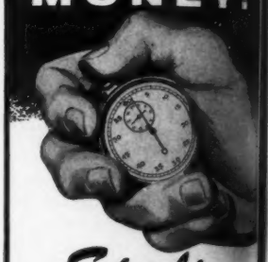
Materials batched separately

In the Noble batch plant, which is one of the largest ever built, each material is proportioned in a separate weigh hopper. These separate batchers all discharge into a collection hop- per from which the complete batch is fed through a swivel chute to any one of six Smith 4-yard mixers.

In addition to the cement, pozzolana, coarse aggregate, and sand, the plant batches a predetermined amount of shaved ice. The ice comes by conveyor from the refrigeration plant at the top of the canyon to an insulated ice-holding hopper; from there it is fed by screw conveyor to a batching hopper and then into the collecting hopper with the rest of the materials.

Water is proportioned by weight, and the system includes facilities for adding Protex air-entraining agent

TIME IS MONEY!



Sterling

RE-BAR TIE WIRE will help you SAVE BOTH

Sterling Re-Bar Tie Wire for the handy reel dispenser worn at the belt, saves tying time . . . eliminates waste . . . steps up efficiency. Safer, too! With Sterling Re-Bar Tie Wire there are no loose ends to endanger workmen's eyes or catch on protruding objects. Kinks and tangles are eliminated. And, Sterling Wire is tougher, stronger and more workable to provide firm, snug ties. Save time — save money with Sterling . . . the better wire for better ties.

See Your Distributor

Sterling Re-Bar Tie Wire is available in coils to the box. No. 14 or No. 16 wire

NORTHWESTERN STEEL AND WIRE COMPANY
SINCE 1879
STERLING, ILLINOIS

For more facts, circle No. 400

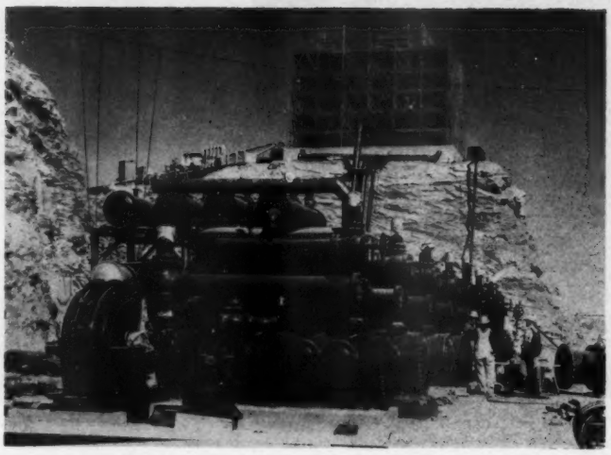
and/or calcium chloride to mixes.

The plant utilizes a metal "punch card" with batch weights for up to 12 different mixes on the one card. By pressing a button, the operator may select any one of the 12 mixes. The automatic batching equipment takes over and delivers that mix to the collecting hopper.

The Smith 4-yard mixers discharge into a partitioned wet-batch hopper that has bins providing a total capacity of 63 cubic yards. Three different types of concrete can be mixed and stored at the same time.

The mix is fed from the wet-batch hoppers to transfer cars on rails. The

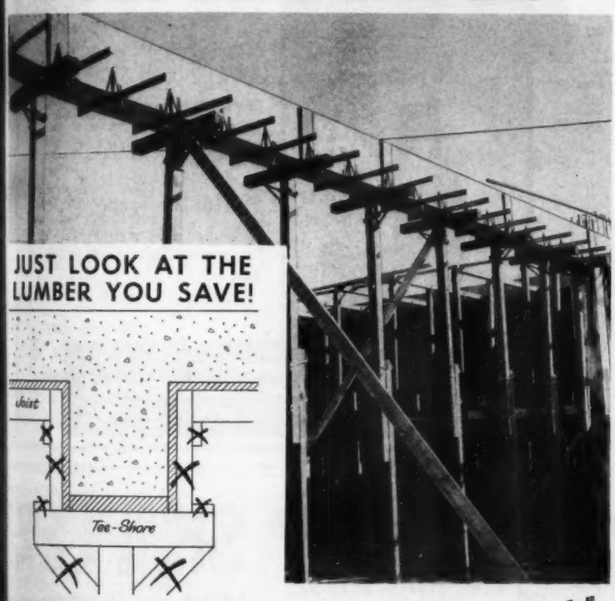
(Continued on next page)



Crews finish assembling a row of Frick compressors that provide a refrigerating capacity of 600 tons per hour to keep the concrete mix between 40 and 50 degrees F. The system will also supply coolant to blocks of mass concrete.

SAVE ON LUMBER!

WITH ELLIS BEAM-AND-COLUMN CLAMPS



The Ellis Beam-&-Column Clamp Eliminates Most Cleats, Stringers, Framing, Bracing and Nailing!

Equally effective, without change, for both beam and column forms, this clamp is adjustable from 5" to 30". In the top photo, beam sides are cut out of 4' x 8' sheets of ¾" plywood. The shores are then spaced 4' C to C, this wider spacing being accomplished by the use of the beam clamp, which ties the three sides together as one unit. The beam sides also help carry the load. At the right is a typical column form with the same clamp.

ELLIS MFG. CO.
INCORPORATED

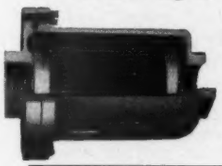
211 N.W. 4th ST. • OKLAHOMA CITY, OKLAHOMA

For more facts, use Request Card at page 18 and circle No. 401

MARVEL
SYNCLINAL FILTERS

FOR DEPENDABLE PROTECTION on all Hydraulic and other low pressure circulating systems

MARVEL FILTERS are designed to give more ACTIVE filtering area —MORE dependable protection—MORE productive operation before filter cleaning is necessary. *They meet J. I. C. Standards.*



IN-LINE FILTERS

CAPACITIES: Up to 60 G.P.M.
PIPE SIZES: ¾"–1"–1¼" and 1½" (at both inlet and outlet).
FILTERING MEDIA: Monel wire cloth available in mesh sizes of 30–40–50–60–80–100–150 and 200 to meet your degree of filtration requirement.
BY-PASS VALVE: Available with or without.
EASY TO CLEAN.

SUMP TYPE FILTERS

CAPACITIES: 5–8–10–20–30–50–75 and 100 G.P.M.
PIPE SIZES: ¾"–1"–1¼"–1½"–2"–2½" and 3".
CONNECTIONS: Coupling—Male Nipple.
FILTERING MEDIA: Monel wire cloth available in mesh sizes of 30–40–50–60–80–100–150 and 200 to meet your degree of filtration requirement.
BY-PASS VALVE: Not available.
EASY TO CLEAN.

LINE TYPE FILTERS

CAPACITIES: 10–20–30–50 and 75 G.P.M.
PIPE SIZES: 1"–1¼"–1½"–2" and 2½".
FILTERING MEDIA: Monel wire cloth available in mesh sizes of 30–40–50–60–80–100–150 and 200 to meet your degree of filtration requirement.
BY-PASS VALVE: Available with or without.
OPERATING PRESSURE: Up to 250 p.s.i.
OPERATING TEMPERATURES: Up to 300° F.
EASY TO CLEAN.

OVER 900 Original Equipment Manufacturers install Marvel Filters as Standard Equipment.

IMMEDIATE DELIVERY

For further information on a specific type or size filter—Write—wire or phone

MARVEL ENGINEERING COMPANY
7227 N. HAMLIN AVE.,
CHICAGO 45, ILLINOIS
Phone: JUNIPER 8-6023

Please send me information on Marvel Synclinal Filters, as indicated: CE-9
☐ IN-LINE FILTERS ☐ SUMP TYPE FILTERS ☐ LINE TYPE FILTERS
Name _____
Company _____
Address _____
City _____ State _____

For more facts, use coupon.

Construction camera

Old concrete pavement that has to be removed for construction of an underpass at the new elevated Airline Highway in New Orleans, La., is loaded out by an International Drott TD-14 Skid-Shovel. About 7,000 tons of pavement had to be broken up and removed for the project.

Work in muddy churned-up areas is the rule for St. Lawrence Transit Corp. trucks delivering concrete for a sewage-disposal plant in Massena, N. Y. This is one of the firm's ten Blaw-Knox M55 truck mixers mounted on a Mack truck.

(Continued from preceding page)

cars travel out on a trestle built across the right keyway of the dam. A bucket dock extending the full length of the trestle makes it possible for the side-dump transfer cars to dump their 12-yard loads into the cableway buckets at any position of the cableways.

The 12-yard buckets are handled by two 50-ton cableways, both of which have rolling head and tail towers to give them coverage of the entire area of the dam and powerhouse. The buckets remain on the cableways throughout the concrete-placement operation.

Refrigeration plant

To cool the concrete to the specified temperatures, M-C&S has installed a refrigerating plant with a capacity equivalent to 600 tons of ice per hour. Part of this capacity is actually producing some 150 tons of ice per hour, and this is used primarily as an addi-

(Continued on next page)

TAMPO means COMPACTION Plus

GROUND PRESSURES EXCEEDING TRUCK LOAD LIMITS

FAST

MODEL SP900
GROUND PRESSURES:
500 LBS. PER LINEAL INCH
85 LBS. PER SQUARE INCH

The TAMPO SP900 yields the highest unit ground pressure attainable with any roller to densify surfaces beyond traffic stress, resulting in a stable roadway. Maximum surface pressures are applied without damage to underlaying courses or overloading of highway structures.

20th ANNIVERSARY 1939

TAMPO MANUFACTURING COMPANY
BOX 4248, STATION A
SAN ANTONIO 7, TEXAS

For more facts, circle No. 402

THE MORSE-STARRETT WIRE ROPE CUTTER

Cutting capacities up to 1 inch, 1-1/16 inch, and 1-1/2 inch.

FAST
Especially designed cutting blade and dies of the finest steel assure fast cutting action.

EASY
Anyone can operate it. The hammer principle eliminates any special skill requirements.

SAFE
The enclosed cutting blade locked in the body of the cutter assures perfect safety.

PORTABLE
Models for tool kit or stationary operation. Made in three sizes.

SEE YOUR DEALER OR WRITE TO
MORSE-STARRETT PRODUCTS COMPANY
1204 - 49th AVENUE OAKLAND 1, CALIFORNIA

For more facts, use Request Card at page 18 and circle No. 403

81 hydraulic models to choose from!
THE WORLD'S MOST COMPLETE LINE

SIMPLEX HYDRAULIC JACKS and PULLERS

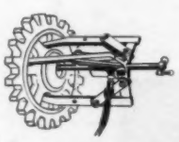
STANDARD HYDRAULIC JACKS
11 Models
1½ to 100 tons capacity
5¼" to 22" travel

"JENNY" CENTER-HOLE HYDRAULIC PULLERS
6 Models
30 to 100 tons capacity
3¼" to 10" travel

ROL-TOE FOOT-LIFT HYDRAULIC JACKS
3 Models
10 to 50 tons capacity

RE-MO-TROL PULLERS
Solid and Center-Hole Rams
39 Models
10 to 300 tons capacity

HYDRAULIC SERVICE and BUMPER JACKS
9 Models
1¼ to 20 tons capacity
13½" to 19" travel



HYDRAULIC PULLERS
4 Models
20 and 30 tons capacity
Push-Pullers, Double and Triple-Grip Pullers

POWERED PUMPS ELECTRIC, GAS OR AIR – 6 Models

HAND PUMPS
3 Models

Look for further information on Lowe and Screw Jacks in other advertisements.

TEMPLETON, KENLY & CO.
2511 Gardner Road
Broadview, Illinois

For more facts, use Request Card at page 18 and circle No. 404

Bridgemen set the 60-foot tie-in piece for the new Summit Bridge spanning the Chesapeake and Delaware Canal. The 2,058-foot-long cantilever bridge linking Maryland and the Wilmington area in Delaware will carry four expressway lanes. Fabrication and erection are being handled by the American Bridge Division.

Some 2,000 yards of stone, weighing 4,800 pounds per cubic yard, is being placed on a slope bank cut that had been eroding and slipping onto State Route 9 at Brookline, Mass. A 5,000-pound-capacity Payloader is moving the stone into place along 900 linear feet of slope.

ELECTRO-*Magic* STEAM CLEANERS

- COMPLETELY PORTABLE
- PRECISION ENGINEERED
- ECONOMICAL TO OPERATE
- HIGH EFFICIENCY
- SAFE OPERATION
- FULLY AUTOMATIC
- RECUPERATIVE CAPACITY

LARGE STEEL WHEELS SUPPLIED. RUBBER TIRES EXTRA

Clean that heavy Equipment and Trucks with a

• MODEL 100

Sells for only . . .

$329.00

F. O. B. FACTORY

SOLD to hundreds of contractors, county and state shops all over the country.

DEALERS AND SPECIALTY MEN WANTED to sell these units in your own exclusive territory—

BUY on the installment plan, 10% down and payments as low as $12.50 monthly. Get full details from factory.

ELECTRONICS, INC.

P.O. Box 150 Vermillion, South Dakota

For more facts, use Request Card at page 18 and circle No. 405

(Continued from preceding page)

tive to the mixing water. In addition, the plant produces 32-degree water for the spray in the aggregate chilling belts and for the mixing water. Cold air is circulated through the aggregate bins of the plant to keep the temperatures down.

After the concrete has been placed, a brine coolant is circulated through coils to keep the temperature within specified limits. The chilling of this coolant is also done by the big refrigeration plant.

Long pipeline for water

Water for the mix, the refrigeration plant, and other uses at the dam site comes from a series of wells located in the general area of the aggregate-production plant some five miles from the dam. Collecting lines from the several wells are joined into a 20-inch steel main, which carries the water to the refrigerating and mixing plants.

Lew Lloyd is concrete superintend-

(Continued on next page)

"Full-Adjust" Seat

. . . another reason why

Autocar is the World's Finest

Up or down—forward or back—tilt! At the touch of a lever. This is the comfort of the contour seat in your Autocar cab. It's just one more quality characteristic that makes Autocar the world's finest heavy hauler.

Autocar

"World's Finest"

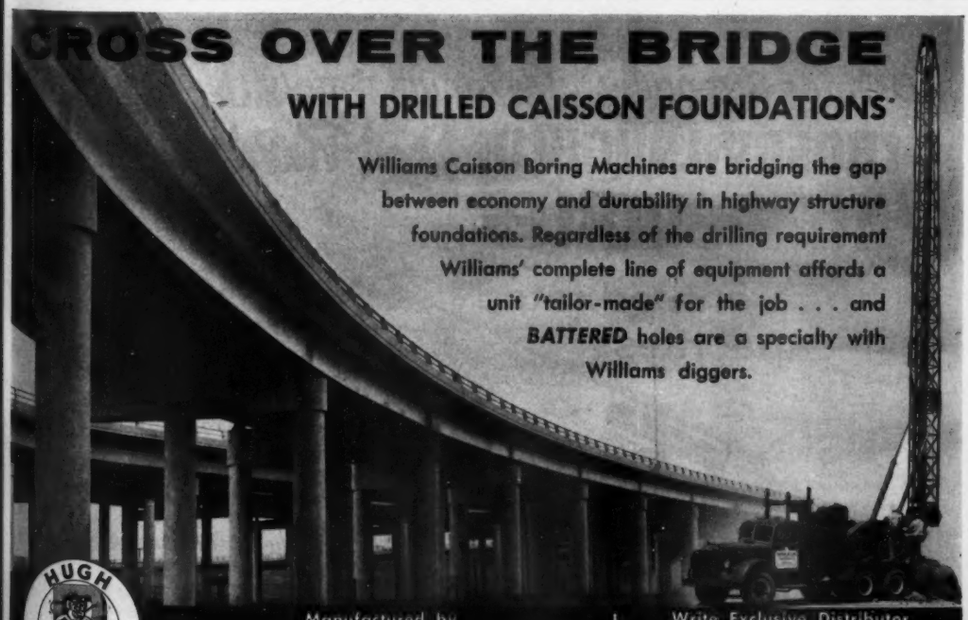
Division of The White Motor Company Exton, Pennsylvania

For more facts, circle No. 407

CROSS OVER THE BRIDGE

WITH DRILLED CAISSON FOUNDATIONS

Williams Caisson Boring Machines are bridging the gap between economy and durability in highway structure foundations. Regardless of the drilling requirement Williams' complete line of equipment affords a unit "tailor-made" for the job . . . and ***BATTERED*** holes are a specialty with Williams diggers.



Manufactured by

HUGH B. WILLIAMS MFG. CO.

8330 Lovett Ave.

P. O. Box 7815 • Dallas, Texas

Write Exclusive Distributor

JOSLYN MFG. & SUPPLY CO.

2101 Corinth St. • Dallas, Texas

for DESCRIPTIVE LITERATURE

For more facts, use Request Card at page 18 and circle No. 406

Some 20,200 square feet of Symons Steel-Ply forms are used for retaining walls required for the downtown phase of the Mark Twain Expressway in St. Louis, Mo. There are 8,000 square feet of wood forms also in use. Work on the 1.246-mile, 6-lane project is scheduled to be finished by early 1960.

Road grading on an Indiana interstate highway is handled by a Gal... 600, powered by an International UD-525 engine. The subcontractor ... this section is excavating 650,000 yards of material. International equip... ment is moving about 6,000 cubic yards every 10 hours.

(*Continued from preceding page*)

ent for Merritt-Chapman & Scott Corp. on the Glen Canyon project, and Gus Larsen is superintendent of the batch plant. The project staff is headed by project manager A. R. Bacon, project engineer A. H. Griffin, and general superintendent Forrest Jones. Project construction engineer for the Bureau of Reclamation is L. F. Wylie. THE END

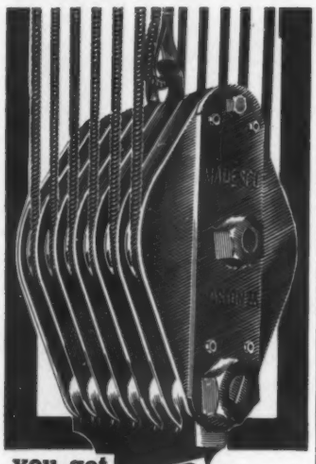
Bucyrus-Erie news

Douglas E. McCuaig has been appointed product engineer in charge of the Hydrocrane Division of Bucyrus-Erie Co., South Milwaukee, Wis. He had been project engineer for walking draglines and commercial cranes and excavators.

Jackson R. Fitzgerald has been appointed chief industrial engineer at the South Milwaukee plant.

In the firm's newly organized International Division, R. T. Craig holds the post of general sales manager; J. A. Rossi, manager of sales of commercial cranes and excavators; and W. F. Harcourt-Palmer, manager of sales of large machines.

Charles B. Brockmeyer has been named sales engineer for dragline buckets and dippers; and Frank T... House, sales development manager. Both will headquarter in the home office.



you get
OVERLOAD CAPACITY
at no extra cost

You're hours and dollars ahead with MADESCO blocks on the job—they're *engineered* to shrug off the relentless beating that gruelling construction work involves. Around the clock and around the calendar you can be sure that MADESCO blocks have the ruggedness to serve you well . . . reflecting 30 years of specialized engineering in hoisting. Extra heavy space-saver crane hook blocks, extra heavy weighted blocks are among a *complete* line to exactly meet your needs. Consult your supplier or write our engineering department.

MADESCO TACKLE BLOCK CO.
Main Office, Easton, Pa.

MADESCO BLOCKS

MAE—MAD 820/715

For more facts, circle No. 408

UNLOAD
✓ quickly
✓ safely
and with just
ONE MAN

Unload sand, stone and other aggregates just as fast as your conveyor can work. No bottleneck at unloading point.

THE NATIONAL CAR SHAKER

Write today!

NATIONAL CONVEYOR & SUPPLY CO. 359 N. Harding Ave. Chicago 24, Illinois

For more facts, use Request Card at page 18 and circle No. 409

Greater Strength . . . Maximum Safety . . .

CROSBY-LAUGHLIN Load-Rated* TURNBUCKLES

guaranteed rated capacities

- Stronger hooks . . . stronger eyes . . . stronger jaws
- Big hex ends make takeup easier, faster, safer
- Most complete range of sizes
- 100% Drop forged . . . Weldless

Write for free specifications catalog listing the most complete line of drop forged fittings for wire rope and chain.

Stocked by leading distributors everywhere.

CROSBY-LAUGHLIN *Division*
AMERICAN HOIST & DERRICK COMPANY
FT. WAYNE, INDIANA

Manufacturers of Crosby Clips and "Load-Rated" Blocks . . . Crosby-Laughlin "Load-Rated" Fittings . . . Lebus Load Binders and Snatchblocks.

*Trademark

For more facts, use Request Card at page 18 and circle No. 410

Tearing up on its bucket edge, a 1¾-yard Thew Moto-Loader starts a 2-foot-deep cut on a roadside ditch for the town of Orleans in Jefferson County, N. Y. The 1-mile ditch measures 4 feet wide. Approximately 4,000 yards of sand, clay, and rock is being excavated for the project.

Rebuilding of a secondary road in Crawford County, Ohio, gets high priority on the county schedule. The Huber-Warco 7D motor grader is cutting a ditch along the road. The dirt bladed out on the road is spread out to help build up the roadbed. A gravel surfacing will complete the job.

F/S TILTING LEVELS

Models 5167-5168-5169

- Erect images—25x or 30x magnification
- Coincidence level viewed in telescope field
- Leveling accuracy .01 ft. per mile or better
- Servicing by factory specialists
- 18 months guarantee

F/S offers a complete line of high quality engineering instruments. Ask your nearest dealer or write today for detailed literature.

FILOTECNICA SALMOIRAGHI, INC.
254 5th Ave., New York 1, N. Y.
DEALERS' INQUIRIES INVITED

F/S DISTRIBUTORS: The A. Lietz Co., San Francisco and Los Angeles, Calif.—National Blue Print Co., Chicago, Ill.—Watts Instruments, Columbus, Ohio—Geo. F. Muth Co., Inc., Wash., D. C.— CANADA: Instruments 1951 Ltd., Ottawa, Toronto, Regina, Montreal.

For more facts, use Request Card at page 18 and circle No. 411

IH division promotes

■ The Construction Equipment Division of International Harvester Co., Chicago, has appointed five new territory sales representatives. John A. Salter will headquarter in Syracuse, N. Y.; Howard J. Barrand, Dallas; George M. Bookman, Charlotte, N. C.; James M. King, Oklahoma City; and Russell H. Whiting, New York City. The five men were previously sales consultants in the sales development section of the division.

Daybrook names manager

■ Robert L. Logan has been appointed Western zone manager for the Daybrook Hydraulic Division, Young Spring & Wire Corp., Bowling Green, Ohio. He will work with truck-equipment distributors in California, Washington, Oregon, Arizona, Nevada, Utah, and Idaho in the sales and service of the company's dump bodies, hydraulic hoists, hydraulic tail gates, and cranes for trucks.

Benefit by the exceptional advantages of

AIR-COOLED DIESEL POWER

For All of Your Power Requirements Specify Lister 3½ to 36 B.H.P.

Note these typical examples of versatile Lister-powered equipment:

- Immediate starting in all temperatures
- Long life
- Noteworthy operating economy
- Continuous, trouble-free service

SIMPLICITY and DEPENDABILITY are stressed in these exceptional, versatile air-cooled Lister Diesels, particularly designed and manufactured for construction uses.

Write for literature. Our engineering department will be glad to advise on your requirements.

Distributorships available in some areas

LISTER-BLACKSTONE, Inc.
42-32 21st Street, Long Island City 1, New York, Tel.: STilwell 6-8202
In Canada: Lister-Blackstone, Ltd., 1921 Eglinton Ave. E., Toronto 13, Ont.

For more facts, use Request Card at page 18 and circle No. 412

Flexible...

HEADQUARTERS FOR

FLEXCO®

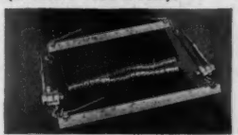
HD® BELT FASTENERS
FOR SPLICING, REPAIRING RIPS AND WORN SPOTS

WRITE FOR BULLETIN F-112

FLEXCO HINGED 500X & 375 FASTENERS
FOR EXTENSION BELTS IN MINING AND CONSTRUCTION

WRITE FOR BULLETINS 500X & 375

FAR-PUL® BELT CLAMPS
Install your belts the modern way (eliminate wood blocks).



WRITE FOR BULLETIN FP-1

ALLIGATOR® V-BELT FASTENERS
. . . for low cost, custom-made V-Belts

Sizes for B, C, D, E and BB V-Belts.

WRITE FOR BULLETIN V-227

Flexible
STEEL LACING COMPANY

4608 Lexington Ave. • Chicago 44, Illinois

For more facts, circle No. 413

A big relocation job for Northern Pacific rail lines is the first order of business for the contractors working at the site of the Howard A. Hanson Dam on the Green River in central Washington. In one of the cut areas, Gardner-Denver Air Tracs, powered by two Ingersoll-Rand 600-cfm compressors, put down blast holes in one of the rock cuts. Atlas dynamite is being used to break the rock. In another area, above, Euclid scrapers pick up loads of earth in a cut. The old alignment of the railroad, background, will be inundated when the dam is completed and the reservoir filled.

Waco appointments

Waco Mfg. Co., Minneapolis, has appointed Donald B. Moritz vice president and general manager of the firm's Cleveland Division. His appointment will enable Frank X. Mangan, vice president in charge of sales, to devote full time to the company's sales activities. This includes the introduction of the firm's new Hi-Load shoring.

The new southern sales manager is Joseph H. Ederer, former manager of the Houston branch sales office. He continues at Houston and will be responsible for Waco's sales and service activities in the south.

Symons Clamp assigns

■ John E. Imonetti has been promoted to assistant to the general sales manager of Symons Clamp & Mfg. Co., Chicago. His new responsibilities include the acquiring and training of new salesmen and dealers in the northern part of the nation, excluding the Pacific northwest.

Harnischfeger appoints

■ Louis A. Flora has been named director of advertising and sales promotion for the Construction and Mining Division of Harnischfeger Corp., Milwaukee. In addition to his divisional assignment, Flora will also be responsible for the company's corporate advertising and public relations.

Timken Roller Bearing personnel news

Five executives have been promoted to new positions in the Foreign Operations Division of Timken Roller Bearing Co., Canton, Ohio. S. C. Partridge, former general manager of the Industrial Division, is now director of sales of the International Division.

John B. Baker has been named chief engineer of the International Divisions. He previously was chief

YOU CAN'T OUTGROW A ROLCOR ROLLER

STATIC OR VIBRATORY

Whether your job is . . .

Crease rolling . . . Driveways . . . Parking lots . . . Patching . . . Tennis courts . . . Sod rolling . . . Maintenance . . . you won't outgrow the usefulness of a Rollpac.

That's why thousands of contractors, landscapers, institutions and others make Rollpac their "number one" unit. One week on *your* job will prove to you why Rollpac is the top selling one-ton roller in the United States.

Here's a two-ton vibratory roller that produces compaction to equal or exceed static rollers weighing eight tons! Vibrapac is 100% American designed and built specifically for asphalt and soil compaction—no corrugation of surfaces. A single lever clutch shifts from static to vibratory action. Works in close places.

Easy to transport with Rolcor Trailer.

WRITE FOR FULL INFORMATION AND LITERATURE

ROSCO MANUFACTURING CO.
ROLCOR DIVISION
3118 Snelling Ave. • Minneapolis 6, Minn.

For more facts, circle No. 414

Now modernize your "Cat" Motor Graders with

Rivinius

Torque Steering Booster...

Hydraulic Moldboard Shift

both for less than $550 with guaranteed performance

Put these cost-cutting Rivinius "twins" to work for you NOW at this new, amazingly low price! Less operator fatigue . . . less job time . . . better job quality mean more profit dollars from every job. Check these Rivinius features —

HYDRAULIC MOLDBOARD SHIFT
for fast, accurate control from inside cab

- Fits any "Cat" 'grader with sliding moldboard
- Can be teamed with Rivinius or other hydraulic power steering — operates off same pump
- Shifts at the touch of a hand — correct position for every application
- Moldboard stops and locks at any position operator wishes
- Functions whether 'grader is moving or stationary
- Moves through full distance of travel in less than 20 seconds

TORQUE STEERING BOOSTER
for easy wheel-turning, even when standing still

- Fits any "Cat" 'grader
- Small, compact, lightweight — but amazingly powerful
- Easy to install . . . trouble-free design . . . few moving parts
- Holds grader from drifting — even on inclines
- Frees operator's hands for handling blade and other controls
- Mounts high above dust, dirt, moisture

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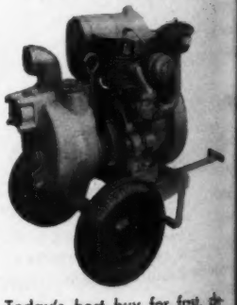
CMC

CONTRACTORS PUMPS



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CONSTRUCTION MACHINERY COMPANY,

WATERLOO, IOWA

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An average of 10,000 yards of fill is moved per 10-hour day by a fleet of LeTourneau-Westinghouse C scrapers for a bridge project near Anderson, S. C. Eight of the rigs, powered by Gm 6-71 diesel engines, are being used on the job by the contractor, Green Construction Co., Spartanburg, S. C.

Lateral Bracing for the Duncannon Bridge over the Juniata River is erected by a Manitowoc Model 3500. The 12-span concrete-deck plate-girder structure, near Duncannon, Pa., will rise 85 feet above mean water level. Phoenix Bridge Co., Phoenixville, Pa., is the steel fabricator and erector.

products engineer. J. Richard Wible, auditor for the firm, has been promoted to general auditor of the International Divisions. Edward H. Hughes fills the new post of manager of sales planning, both domestic and international. He formerly was assistant to the director of sales. The new manager of production planning, domestic and internation, is Charles L. Richey, former general production manager of the Bearing and Rock Bit Divisions.

An additional six men in three Timken divisions have also been promoted. R. K. McConkey is now general manager of the Industrial Division; Wyn E. McCoy takes over McConkey's former post of assistant general manager. Those promoted in the Engineering Division are A. E. Matejka to chief product engineer; and C. L. George, assistant chief product engineer. R. H. Holsing fills the post of chief engineer in the Rock Bit Division. C. L. Simpson is now auditor.

Soiltest names agency

■ Richard S. Smith & Associates, Chicago public relations agency, has been appointed to conduct a public-relations program for Soiltest, Inc., Chicago. Soiltest is a subsidiary of Cenco Instrument Corp.

Food Machinery promotes

■ John N. Kelley has been promoted to sales engineer for 11 western states for Form-Crete products, manufactured by Food Machinery & Chemical Corp., Lakeland, Fla.

Philip Carey news

The Quality Control Division of The Philip Carey Mfg. Co., Cincinnati, has appointed Frank W. Lippard assistant manager. He will assist the manager with quality-control and inspection operations in the home plant and in plants at Perth Amboy, N. J.; Houston; Memphis; and Wilmington, Ill.

SALES OPPORTUNITY

$200.00 profit per average direct sale with a well-known national advertised Pipe Tool. A MUST for every contractor and industry using pipe or conduit. No technical knowledge required. Shipped on trial to help get orders. Leads furnished. Write background, references, etc., addressed to Box 516, CONTRACTORS AND ENGINEERS, 470 Fourth Ave., New York 16, N. Y.

TRUCO® DOES IT AGAIN!!! Six foot diameter core weighing 2 tons is easily cut with Truco Portable Diamond Drilling Equipment

JOB: Remove core 6'1" in diameter from heavily reinforced concrete floor 11½" thick.

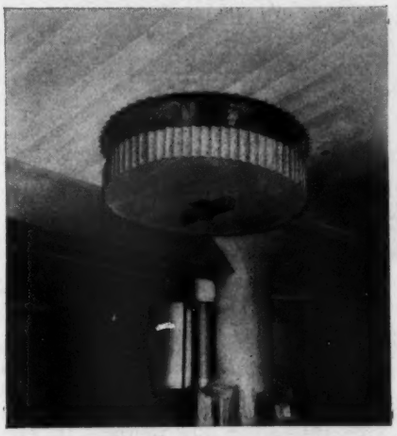
PROJECT: Installation of vacuum air cleaners in the plant of a large milling company.

DRILLING CONTRACTOR: Midwest Diamond Core Drilling Company, 1954 St. Anthony Ave., St. Paul, Minn.

TOOLS: Truco Portable Diamond Drilling Machine Model C, 350 rpm motor. Truco Diamond Drill Bits 3" and 4" O.D.

OPERATION: Standards of sanitation demanded that absolutely no dust be created in the execution of the work. This made diamond drilling mandatory as any other method would have required shutting down the plant. A hole drilled in the center of the core allowed a chain to be passed through, looped around a 4 x 4 timber, and hitched to a rig to support the core. 3" and 4" O.D. Truco Diamond Bits were used in drilling through the floor around the giant core. The Model C Truco Portable Diamond Drilling Machine (350 rpm motor) was easily moved from hole to hole; set-up time was but 4 minutes and actual drilling time only 8 minutes per hole. Although heavy steel bars had to be cut in every hole, two Truco Bits did the entire job.

Truco Portable Diamond Drilling Machines and Truco Diamond Drill Bits offer savings up to 70% and can save their cost on a single job or in a single day.



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DRILLS IN ANY POSITION AROUND THE CLOCK

TRUCO MASONRY DRILLING DIVISION
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Detroit 38, Michigan

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NO CONCRETE PIT!
Easiest to MOVE!

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PORTABLE TRUCK SCALES

Engineered for rugged use in the field. Low initial cost, no maintenance. Can be used as PITLESS SCALE saves on pit costs.

CAPACITIES: 20 to 52 tons. DECK LENGTHS 18 to 43 ft.

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Precision Scales since 1918

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SEE **Sasgen** FOR CONTRACTORS' DERRICKS • HOISTS • WINCHES

- Easily rigged on the job
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ROOFERS' CIRCLE SWING DERRICKS
360° operation. 500 to 2500 lb. capacities. Optional type of power. Champion electric shown.

CONTRACTORS' HOISTS
Single or double drum types with capacities from 500 to 5500 lb. single line pull. Optional type of power.

Hand-Powered WINCHES
Safe worm or spur gear design. Sizes for 400 to 40,000 lb. load. No. 110 shown.

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The Campbell Sliding Cab - - - for models HU, HH, HO, H30R, H50, H70, and H90 "Payloaders"!!!

This sturdy, modern design offers features long desired by "PAYLOADER" operators, among them—Sliding top, ball bearing mounted on steel channel—Rubber seals to insure weather tightness—Permanently mounted access ladder—Rear view mirror—Tinted safety glass windshield and skylight.

Investigate this completely new design in "Payloader" Cabs by calling your "Payloader" distributor, or contact

CAMPBELL DETACHABLE CAB CO.
WAUCONDA, ILLINOIS

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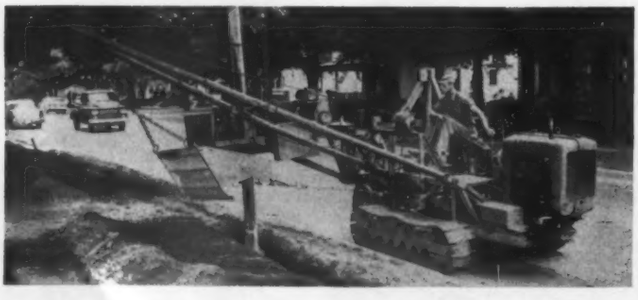
Job photos don't lie . . .

See from these photos how the Cleveland 80W's ability to pull backfill into trench permitted spoil to be placed off the street, away from the curb—no blocked-up catch basins, no need to lift backfill over curb, no interference with traffic (good public relations!). Note also how the one-man-operated 80W first backfilled and tamped driveways, making them ready for immediate use (more good public relations!) then backfilled and tamped the rest of the trench.

but they tell only part of the CLEVELAND 80W story

But you've got to see the 80W in action to really appreciate it—a cost-cutting versatile machine that fits so many different underground construction jobs. It handles and lays pipe—sets valves and hydrants—pulls street crossings—backfills fast *from either side* of trench, toward or away from itself—simultaneously tamps fill to the most rigid specifications—does a complete clean-up job.



The CLEVELAND TRENCHER Co.
20100 ST. CLAIR AVE. • CLEVELAND 17, OHIO

Good Everywhere®

For more facts, use Request Card at page 18 and circle No. 421

Manufacturer

James H. Eddy, left, director of executive development, and Frank P. Minnelli, director of planning for The Yale & Towne Mfg. Co.

Expanded corporate planning in executive personnel development and market growth has been established by **The Yale & Towne Mfg. Co.**, New York City. Both new planning departments will operate out of the company's executive offices in the Chrysler Bldg., New York City.

James H. Eddy fills the newly created post of director of executive development. His department is responsible for directing the development of a continuous reserve of management personnel, and for the establishment of more effective communication techniques within the management of the company's plants here and abroad.

In the new corporate post of director of planning is **Frank P. Minnelli.** His department will recommend programs enabling the firm to achieve its long-range objectives through possible product diversification or expansion of operations. Minnelli will also direct the activities of a corporate planning committee comprising representatives of the Materials Handling and Hardware Divisions.

The Materials Handling Division has named **William Wire** assistant sales manager of Worksaver and Warehouser sales, and **Charles L. Riewe** as a field sales engineer.

George L. Collier, president of Dorsey Trailers.

A new management team, consisting of **George L. Collier** as president and **T. K. Dorsey** as executive vice president, now heads **Dorsey Trailers,** Elba, Ala. This change follows the death of J. V. Wright, former president.

(*Continued on page 146*)

DON'T BE FOOLED
all tilt trailers are NOT alike...

only a MILLER:*— *is so perfectly balanced*

a child can hitch it!

*—*has a SEPARATE tongue frame*

The tongue in the OT-15 is not merely suspended from the platform frame (as in many tilt trailers), it's a frame in itself. With a platform pivot point way back near the rear wheels, MILLER provides the lowest possible platform without a "beaver tail" hump.

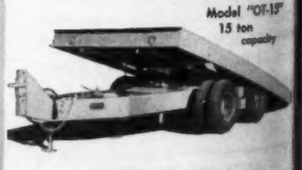
ORDINARY tilt trailers creep or force wheels back on loading

need hazardous beaver tail with unsafe over-the-hump loading

hazardous ridge where control is gone

Like beauty, performance is more than skin deep. A lot of tilt trailers may look alike "at a distance" . . . but when you *really compare* . . . on a feature-by-feature basis, you'll find so much more performance-per-dollar in a MILLER Tilt-Top. Look for example, at the amazing unretouched, hitching photo above. The massive OT-15 weighing about 6000 lbs. is so perfectly counterbalanced that it takes only 35 lbs. of lift to hitch the tongue. And look at *all the other advantages*, illustrated at the left, that you get with a MILLER. When buying a trailer *don't be fooled* by price comparisons alone. Compare where it counts . . . and you'll find each of 10 MILLER models from 4 to 22 ton capacity the best buy, by far!

Model "OT-15" 15 ton capacity



Miller Tilt-Top Trailer Inc.
456-Z S. 92nd St. Milwaukee 14, Wis.

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THE HOE BUCKET ATTACHMENT THAT SAVES TIME, MONEY AND EQUIPMENT

Designed, tested and made by an excavating contractor for contractors. No engineers' pipe dream . . . this attachment does the job it's made to do and does it fast and right. When frozen or tough, hard ground conditions come up, you are ready to break through without any delay. And there is no danger of boom or bucket damage.

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4½ Mile Road • Racine, Wisconsin

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Basic Designs Adapted to Cost-Saving Custom-Engineering

You'll solve your special Hydraulic Cylinder needs faster, at lower cost, by a quick call to HUSCO—and a custom-engineered modification of one of many HUSCO Basic Cylinder Designs . . .

Telescoping, Single-Acting, Double-Acting Differential Types in many sizes, offer features that assure improved performance, longer service, lower initial and operating cost, on your equipment. Write for details —or the answer to one of your problems.

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YES! YOU CAN BUY DIRECT SEND US YOUR ORDERS FOR
NEW ROTARY SWEEPER BROOM CORES

WE MANUFACTURE ALL SIZES

SUGGESTION—To faraway users. Order cores only without fibres but ready to fill.

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$69.50 UP. And many others

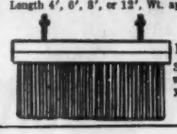
Also Cores Made to Your Specifications

KENNEDY'S **VAN BRUSH MFG. CO. INC.** SINCE 1906
327 S. West Blvd. Kansas City, Mo.

Road Builders — it's sensational!
BIG **PECKERWOOD** BIG
C-O-N-T-I-N-U-O-U-S
Drag Broom Levelers with Spring Steel Wires or Bass Fibres six inches wide and lengths to 13 feet, and also now three inches wide. No frame required.

Also furnished filled with Palmyra-Hickory or Bass Fibres or even Spring Steel Wires.

WE SHIP WORLDWIDE—IMMEDIATELY
In stock — ONLY $3.50 FOOT
Length 4', 6', 8', or 12', Wt. approx. 5½ lb. (foot)



THE LITTLE PECKERWOOD
3" wide, 15" long, with two bolts, fits your present frame.
ONLY $2.50 EACH

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Sand would scrape the markings off most tapes!

This is Lufkin's Super HiWay®. Engineers and layout men swear by it. The big reason: it has a Chrome Clad® line that defies defacement . . . by sand, mud, grit or years of use.

Raised markings and protective borders are a part of the tape itself . . . and will last as long. The line is .025" thick with a rust-resistant base coat and a series of electroplatings, topped by a final layer of tough chrome. It's the most durable tape line made.

Available in 100', 200' and 300' lengths, with or without reels. Three choices of end markings plus chainman's conversion rule.

THE **LUFKIN** RULE COMPANY
TAPES • RULES • PRECISION TOOLS

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DON'T THROW AWAY CRACKED DIESEL CYLINDER HEADS

You can save 50% of replacement cost with Factory Rebuilt Swick-Guth Heads. Swick-Guth restores cracked or worn heads, blocks, transmission cases to a Guaranteed good as new condition by the Controlled Heat Process . . . successfully used for more than a Quarter Century.

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SWICK-GUTH CO.
McPHERSON, KANSAS • FORMERLY GUTH CO.

"SPECIALISTS IN WELDING DIESEL CASTINGS"

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(Continued from page 144)

Collier has been the company's controller, treasurer, and director. The executive vice president, a son of one of the founders of Dorsey, has served the company since 1939 in various phases of production as well as sales.

Roy Smith has been appointed vice president and assistant treasurer and research department head of **Power Curbers, Inc.**, Salisbury, N. C., which has taken over E. L. Hardin Associates, Inc. Smith is the inventor of the Smith-Field automatic curb and gutter machine which, together with the Stephens-Canfield automatic curber, was manufactured by Hardin Associates. Power Curbers will continue to produce the machines.

Del Hetrick, sales manager of tractor equipment for Gar Wood Industries, Inc.

Del Hetrick has been promoted [illegible] sales manager of tractor equipment for **Gar Wood Industries, Inc.**, Wayne, Mich. In his new post, Hetrick will direct sales development and [illegible] agement activities for the company's new line of crawler-tractor equipment from the Findlay, Ohio, plant.

The Loewy-Hydropress Division of **Baldwin-Lima-Hamilton Corp.** has elected **Frederick A. Fielder** vice president and general manager, [illegible] general sales manager and assistant general manager of the division. Fielder succeeds the late [illegible] Loewy, who founded the company that have become the Loewy-Hydropress Division, New York City.

Charles A. Headlee, comptroller of Universal Atlas Cement Division, U. S. Steel Corp.

The new comptroller for **Universal Atlas Cement Division**, U. S. Steel Corp., New York City, is **Charles A. Headlee**, who advances from the position of assistant comptroller. He succeeds **Henry C. Schmielau**, who has recently retired after 48 years as vice president and comptroller of the division.

Donald A. Kaessen has joined the Pump Division of the **Sterling Machinery Co.**, Los Angeles, as chief design engineer. He has been associated with the pump industry in the Midwest in such capacities as chief engineer of Gorman-Rupp Co., project engineer for F. E. Myers & Bros. Co. and design engineer at the Peerless Pump Division of Food Machinery & Chemical Corp.

George A. Saar has been appointed assistant to the vice president of the Industries Group of **Allis-Chalmers Mfg. Co.**, Milwaukee. For the past four years, he has been manager of the electrical department in the company's Norwood, Ohio, plant.

The new vice president in charge of sales for the **Koehring Division** of Koehring Co., Milwaukee, is **Edwin L. Goree.** Prior to joining the firm, Goree was sales manager of commercial cranes and excavators for Bucyrus-Erie Co.

Clyde Iron Works, Inc., Duluth, Minn., subsidiary of Republic Industrial Corp., has appointed **Harry L. Greenwood, Jr.**, vice president of sales in the home office. He was formerly branch manager in New York City.

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VIBRATORY SOIL COMPACTORS

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. . . when you can *get the facts* on vibratory soil compaction . . . Vibro-Plus, pioneers and the only specialists in vibratory soil compaction, offers this practical booklet, at no cost, explaining in detail the savings made possible by using vibratory equipment . . . To obtain this booklet, contact Vibro-Plus directly or your local distributor.

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STANHOPE, NEW JERSEY

AD 41-77

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HERE'S A ONE MACHINE FLEET

TROJAN 404 MAINTAINS ALL TOWNSHIP ROADS WITHOUT ASSISTANCE

A "one machine fleet" best describes the everyday performance of the Trojan Model 404, purchased by the Township of LeRoy, New York. Mobility, plus Trojan's thirst for work, has shrunk the size of the Township and taken over jobs normally handled by other types of equipment . . . Hank Sheridan, superintendent of roads for the Township says, "Right now we're using our rig for loading haul trucks here in a gravel pit. Tomorrow we might be using it to pull out trees 20 miles from here; or cleaning up fence rows 15 miles from the trees; or any of a number of other duties this multi-purpose rig has taken over . . . Working in conjunction with our portable crusher, the Trojan 404 proved so productive we had to hire another truck to back up the three we already own." The Trojan 404 is doing a job for LeRoy, it can do the same for you . . . Contact your local distributor — let him demonstrate Trojan ability.

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TROJAN DIVISION BATAVIA, NEW YORK SAN LEANDRO, CALIFORNIA

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TRACTOR SHOVELS
YALE & TOWNE

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Traction and mobility bring major economies to well-known paving fir

Save $50,000 investment — and $4 per hour

This Michigan Tractor Shovel—one of 11 owned by Texas Bitulithic Company, Dallas—has, *by itself*, saved a $50,000 investment *plus*, in most cases, $4 per operating hour.

It alone has replaced a three-unit fleet common to many paving operations. Namely, a 130-plus hp crawler formerly used to pull a big 10,000 lb, 24-30 ft strikeoff planer—*and* another 130 hp crawler and matching scraper used to supply and remove gravel ahead of the planer. "Duplication of these three machines, which were moved to another job, would have cost us $75,000," says L. A. Armstrong, Texas Bitulithic assistant secretary-treasurer. "Their operation would require one more man and $4 per hour more actual operating costs (not counting depreciation, etc)."

Instead, the $24,000, 133 hp, 26,500 lb Model 175A Michigan does both towing and gravel supply-removal jobs.

Torque converter smooths towing operation

On towing operation, Michigan dependability and tractive ability have probably been the most important factors. Machine has four-wheel-drive, weighs 26,500 lbs, so has no trouble pulling the big two-lane planer. Its torque converter drive has virtually eliminated wheel spin, so holes in the sub-grade are no longer a worry. Operator has excellent view of leveler blade, and Michigan's power steer gives the instant fingertip control so necessary to towing any planer. And the dependable Michigan has lost no assigned work-time—so Texas Bitulithic's paving crew has never needed to slow down due to insufficient crowning.

25 mph speeds gravel supply task

On gravel handling, mobility is probably the key factor in Michigan's success. For example, every time material piles high ahead of the planer, the Michigan operator simply stops his machine, detaches a drawbar pin, and drops the planer yoke. In a few minutes, excess material has been Michigan-handled: cast aside or truck-loaded. Similarly, when more material is needed, the 25 mph Michigan runs down the sub-grade to a break in the forms, scoops up a 2¾ yard load, and hurries back. Re-attachment the big planer takes one man (t Michigan operator) only a few minu and planing continues.

Ten other Michigans do vari jobs for pipe, dirt, paving cre

Elsewhere, Texas Bitulithic Compa continues to make good use of their *other Michigans* (all 80 hp, 1¼ yd Mo 75A's). "We run 25 to 30 jobs at a time explains Equipment Supt R. H. Arno "do $15,000,000 to $20,000,000 worth earthmoving, bridge work, concrete a asphalt paving per year. We put one 7 on each major job . . . shuttle our oth Michigans, under their own power, b tween two to five smaller jobs ea Tasks include hauling concrete from m ers to pour sites. Carrying pipe. Tow loading sand, gravel and dirt. Level parking lots. And many, many other

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